

# AMERICAN ARTISAN

December 1960

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- Sheet Metal Contracting
- Ventilation and Dust Removal

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# WHAT'S BEHIND THESE TWO MARKERS?

Underwriter's Laboratories itself cautions you with these words: "It should be noted that products *Labeled* or *Listed* are not necessarily equivalent in quality or merit."\*

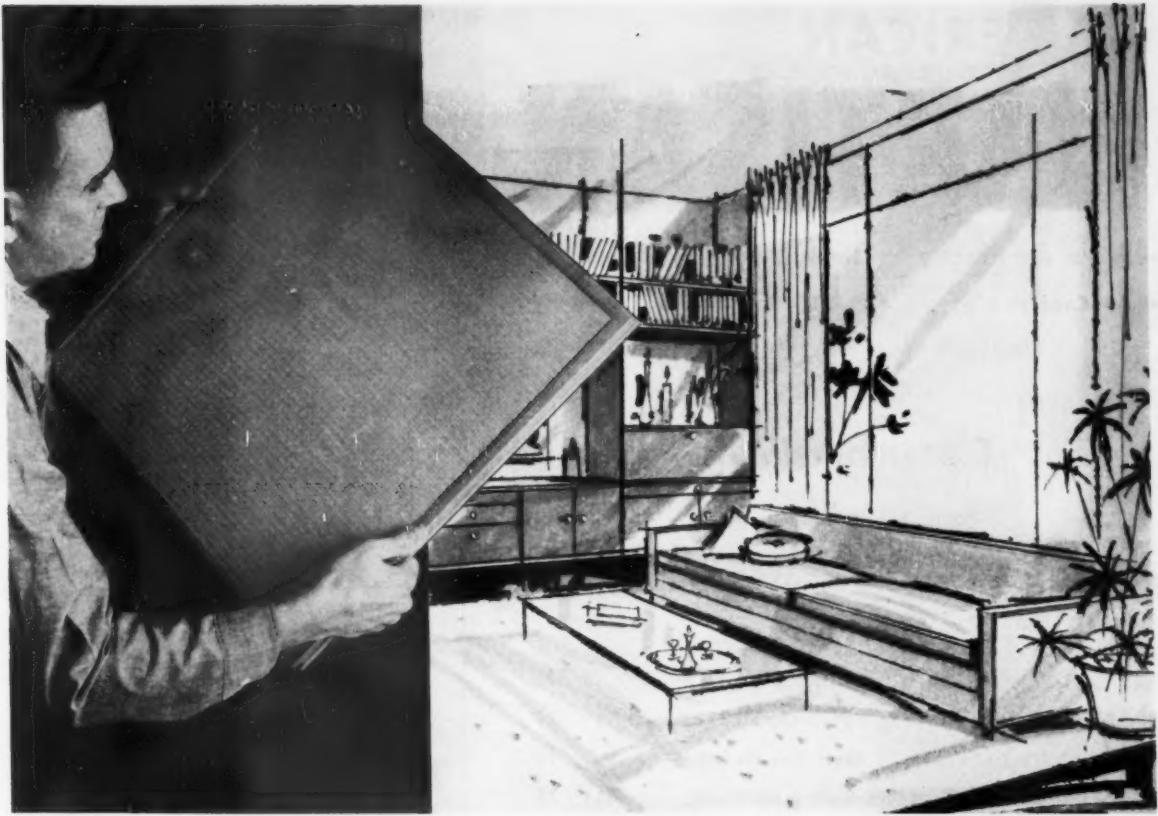
Every Field Draft Control carries this U.L. marker. But not every draft control that carries the U.L. marker is a Field.

Heating dealers discovered long ago that it pays to *know the difference* — and pays to *pay the difference*.



"Testing for Safety", October, 1959,  
Underwriters' Laboratories, Inc., p 12.

**FIELD CONTROL DIVISION, Conco Engineering Works, Inc. — Mendota, Illinois**  
AFFILIATES: Spartan Tool Division • Powered Sewer Cleaning Equipment • Materials Handling Division • Cranes, Hoists • Conco Building Products, Inc. • Brick, Tile, Stone



## How to make filter-failures your road to success

It's no problem to find unhappy filter-users these days. A lot of the air filters on the market today just aren't equal to the demands of modern forced-air and air-conditioning systems.

That's where you and PLIOTRON super-filters come in. For you install PLIOTRON with the knowledge that it will stop fine dirt particles ordinary filters only sift-up to *five times* more of them, in fact.

Customers are bound to be happy with that kind of improved filter-power. Result: you eliminate a lot of complaints and profit-eating call-backs.

More than that, one PLIOTRON installation

almost always leads to others. Users want more of the same extra-efficient, trouble-free filtering in *all* their air-conditioners and heating units.

Word gets around, too, that you are the man who clears up filter-failure problems. And that's the kind of business-boosting advertising that you can't buy—for love or money.

Best of all, the new PLIOTRON CR costs no more than less effective filters. And you've also got the improved PLIOTRON HD Filter for critical installations calling for maximum filter-power. More details? Just write Goodyear, P. O. Box 52, Akron, Ohio.

**for** cleaner air everywhere-

**NEW PLIOTRON AIR FILTERS BY**

**GOOD YEAR**

THE GREATEST NAME IN RUBBER

Pliotron - T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

# AMERICAN ARTISAN

- Warm Air Heating • Sheet Metal Contracting
- Air Conditioning • Ventilation And Dust Removal

December 1960

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Founded 1864; Vol. 97 No. 12

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Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago 2, Ill., U.S.A. President and General Manager, Chas. E. Price; Production Manager, L. A. Doyle; and Subscription Sales Manager, W. W. Gregory. Copyright 1960 by Keeney Publishing Company.

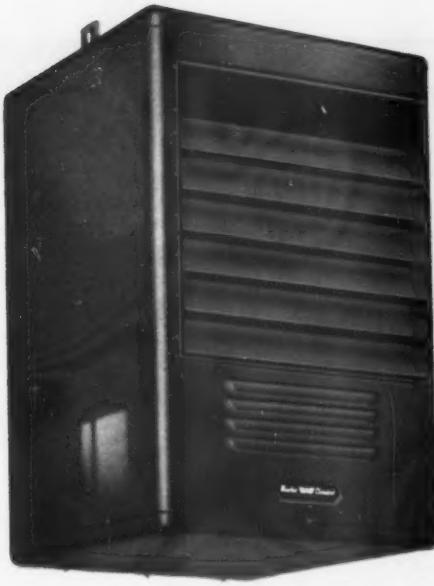
Merged with American Artisan are "Warm Air Heating" and "Furnaces and Sheet Metals."



Yearly Subscription Price—U.S. and possessions, \$3.00; Canada, \$5.00; Cuba, Mexico, South America, Central America, Spain, \$6.00; Elsewhere, \$7.00. Single copies, U.S. and possessions, 60c. Back numbers, 85c. SECOND CLASS POSTAGE PAID AT CHICAGO AND MENDOTA, ILL.

SUBSCRIBERS—*Change of Address:* Publisher needs five weeks' advance notice, mail address from current issue envelope, and new address with city postal zone number. Mail to . . . American Artisan, 6 N. Michigan Ave., Chicago 2, Ill., U. S. A.

POSTMASTER: *When Magazine Is Undeliverable:* Send Form 3579 to publisher at above address. Include city postal zone AND DATE on last line under mail address on envelope as our key.



for  
performance  
above  
the  
ordinary



## MUELLER CLIMATROL 160-1 Gas Suspended UNIT HEATER

Look at the many ways this unit means dependability! Its all-welded, unique-design heat exchanger gives efficiency and extra-long, trouble-free life. No flame impingement — no hot "burn out" spots. Cast iron, drilled-port burners for quiet, fuel-saving operation. Solid, durable casing stands up well during installation, and stays handsome for years. Fully insulated for maximum efficiency.

The 160-1 is available in nine sizes from 25,000 to 225,000 BTU input. It is shipped completely assembled and pre-wired. Handy hanging-and-lifting brackets lighten your work. Available in high or low voltage control. Delayed automatic fan control and summer switch are standard. And every unit is test-fired before shipment. Fully AGA and CSA approved. See your Mueller Climatrol man for details. Or write direct.

*The Complete Line for Indoor Climate Control*

**Mueller**  **Climatrol**  
DIVISION OF WORTHINGTON

MC-50A

2030 W. OKLAHOMA AVE., MILWAUKEE 1, WIS. • 1024 WESTMINSTER AVE., ALHAMBRA, CALIF.

**the editor's  
notebook**

## **Thumbing Through This Month's Artisan**

... we find a graphic description of the value of good installation techniques in providing better heating with a minimum of service calls. *Tells Competition His Way of Making A Better Heating Installation* explains how a dealer-contractor handles a basement installation, sizes ducts, locates supply air openings, and makes use of joist space. The article also shows how the free exchange of information at local association meetings benefits individual members and the industry.

## Techniques

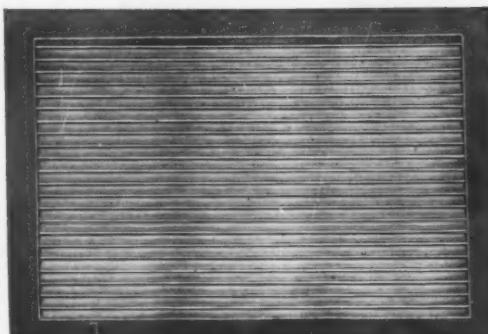
... used for making tight joints in high velocity ductwork are explained in *How to Fabricate High Velocity Duct Systems*. Production-line methods used by a sheet metal contractor to fabricate round and rectangular ducts are described, and the reasons behind the special design of high velocity duct systems are explained. The article also explains how the special components needed in high velocity duct systems are fabricated and incorporated into production-line assembly.

### **Constant**

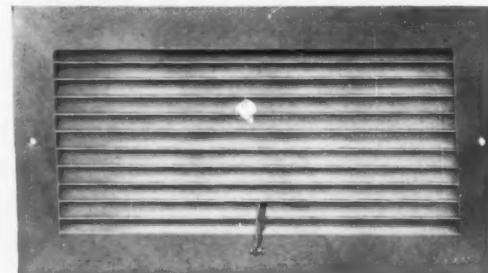
. . . blower operation is necessary to achieve good comfort conditions, and the importance of air motion as a factor in air conditioning has been well established by many studies. *Why Constant Blower Operation Is Preferred* summarizes these studies, and gives an historical account of the developments and set-backs that eventually led to the manufacture of equipment that permits con-

# A-J NO-VISION ALL ALUMINUM GRILLES

### **Fixed and Shut-Off Types**



No. A-760-B All Aluminum, No-Vision Grille



No. A-76-B All Aluminum, Shut-Off Type, No-Vision Grille

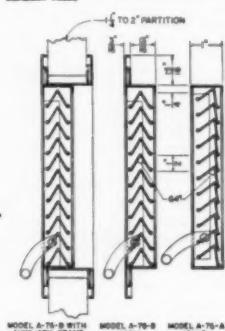
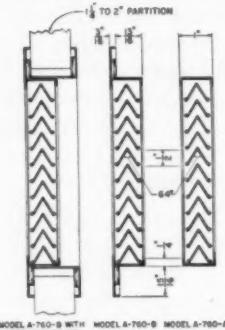
**ALL NEW! The A-J No. A-760 and A-76 Series no-vision grilles, being only 13/16" thick, have no bulky depth to extend beyond door thickness. Excellent for duct installation for supply and return air. Louvers are on 1/2" centers, and are completely sightproof from any angle. Free area is approximately 48%. Corrosion and rust-proof. Requires no upkeep. Satin finish is standard.**

**Write for FREE  
A-J catalog!**

A-J Manufacturing Co.



Dept. A-12  
3601 East 18th Street  
Kansas City 27, Missouri



**the editor's  
notebook**

(Continued)

stant as well as intermittent blower operation. As the author points out, intermittent blower operation too often results in sudden, uncomfortable temperature changes, and too great a temperature variation between floor and ceiling.

Final

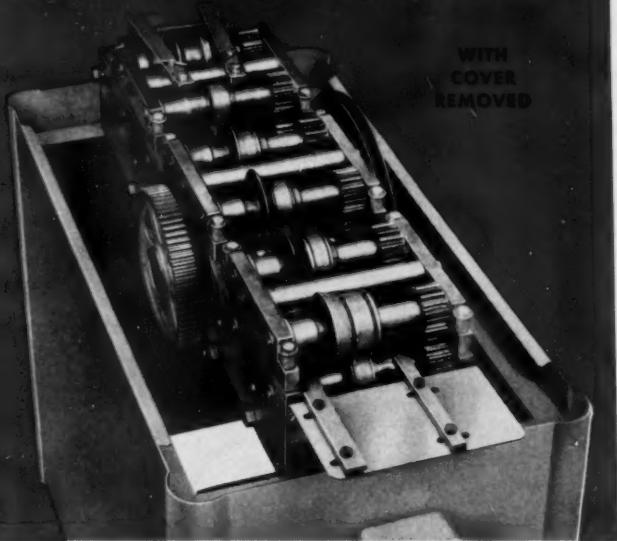
. . . phases of his company's successful sales training program are told by the author in *Train Salesman to Know All About Your Products*. In this conclusion of a two-part series, we see how the new salesman is taken through the engineering and product knowledge phases of his training period. The engineering phase is designed to teach the salesman how to select the right equipment for the job, while in the product knowledge phase he learns which sales points in his line of equipment to concentrate on. Using everything he has learned, the salesman then builds a sales presentation, and concludes his training program by accompanying top salesmen on sales calls.

## **Accountant Gives Tips On Conducting Business**

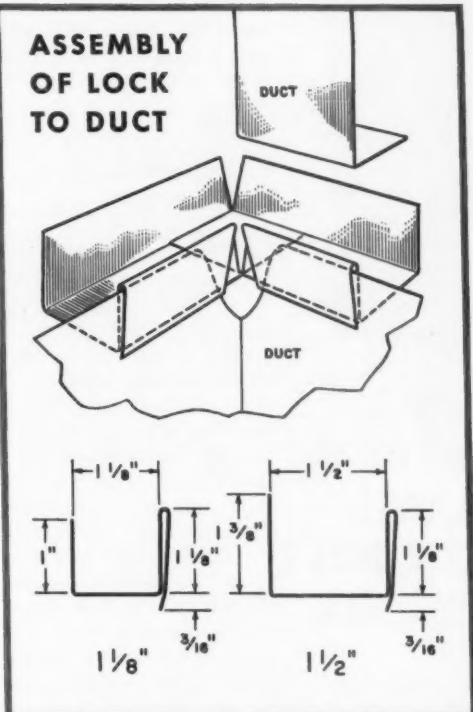
THERE is no one road to success in business. There are many ways, but the businessman has to be able to read the road signs as he moves ahead, according to George Hester, an independent accountant. I agree with Mr. Hester. It pays to take the time to determine which road is the right one and then to follow it carefully.

Mr. Hester also says, "You can't walk away from competition, no matter where you go or who you are. One of the biggest road signs — and

# Newest Addition TO THE Lockformer Line



## THE NEW CLIPROL



*...for high speed production  
forming of government cup  
clips (pocket locks)*

Now . . . produce uniformly accurate government cup clips at production speeds of 70 to 80 fpm. and at very low unit cost. The new Lockformer Cliprol can save up to 40% of the time and labor needed to fabricate clips by ordinary hand brake methods.

You completely eliminate the risk of measuring or bending mistakes because the Cliprol is a precision-built machine that produces only uniform government clips—even as short as 6". What's more, the new Cliprol takes only one man to operate, and requires practically no maintenance.

Model 1 1/8" forms a 1 1/8" standing seam section; Model 1 1/4" forms a 1 1/4" standing seam section. Both models handle up to 22 gauge galvanized or .040" aluminum. The pocket lock produced with the new Lockformer meets government specifications.

Write for complete details.

**LOCKFORMER**

TIME SAVING, MONEY MAKING EQUIPMENT

manufactured by  
**THE LOCKFORMER COMPANY**  
Dept. A, 4615 West Roosevelt Road, Chicago 50, Illinois

In Canada: Brown Boggs Foundry & Machine Co., Ltd.,  
Hamilton, Ont.

## the editor's notebook

(Continued)

one that is often missed—is 'occupational obsolescence,' which affects machines as well as men. If you want to keep up with competition, you've got to have modern tools for both shop and business.

"A budget designed to prevent occupational obsolescence is an important business tool because it will provide the financial guidance needed in purchasing new equipment for both shop and office.

### Budget Gives Direction

"A profit and loss statement tells you where you have been. A budget helps you to adjust the direction of your business to where you would like it to go. After you have set up your profit and loss figures in percentage form, and made your comparisons with an operating ratio table, do some thinking ahead. What do you think your future sales will be? How can you increase them? Have you lost sales on slow turnover items? If so, can you feature some of your better paying items more prominently? Are you losing volume because of poor appearance of your place of business? Should you advertise more? Now analyze your expenses. What are they likely to total? Can you reduce them by adopting more efficient methods? Should you buy some newer and lower cost equipment?

### Make Sales Estimate

"After thinking these things out, make out an estimate, item by item, of what you expect sales and expenses for the coming year will be. Now compute each key expense item as a percent of sales, and compare, first with your profit

## the editor's notebook

(Continued)

and loss statement, and then with a cost-of-doing business study for your line. You will then find, perhaps, some places where your planning will require adjustment. This will cause you to do what every good business has to do, which is to set up a target. Aiming for future targets is nothing more than a description of forward planning.

"When you have a budget, you have a target. During the year, you will be checking actual results against your target. Then, if things get out of alignment, you can take necessary steps of correction. With this kind of forward action, you can literally force the results you would like to achieve—instead of locking the barn door at the end of the year when the horse has been gone a long time with your profits in the saddle bag."

### Year 'Round System Is Wise Investment

YOU MAY HAVE READ recently in your local newspaper about the "Ideas for Living" exhibit held in New York City early in November. Of course, among the many products on display was heating and summer air conditioning equipment. This exhibit gave homeowners a chance to properly evaluate the many items that can be installed in a house to add to its comfort and convenience. I believe Paul H. Rutherford, general manager, Delco Appliance Div., General Motors Corp., summarized very well the advantages of installing year 'round air conditioning. Mr. Rutherford said: "In terms of greater year 'round comfort, more pleasant and healthful living and increased resale value of a home, installation of a com-

# MAKE

## AIR-EASE

## the "ONE"



HEATING

COOLING

GAS FIRED

OIL FIRED

HI-BOY UNITS

BASEMENT UNITS

COUNTERFLOW UNITS

HORIZONTAL UNITS

BLOWER FILTER UNITS

CHOICE OF CONTROLS

WRITE . . . for information

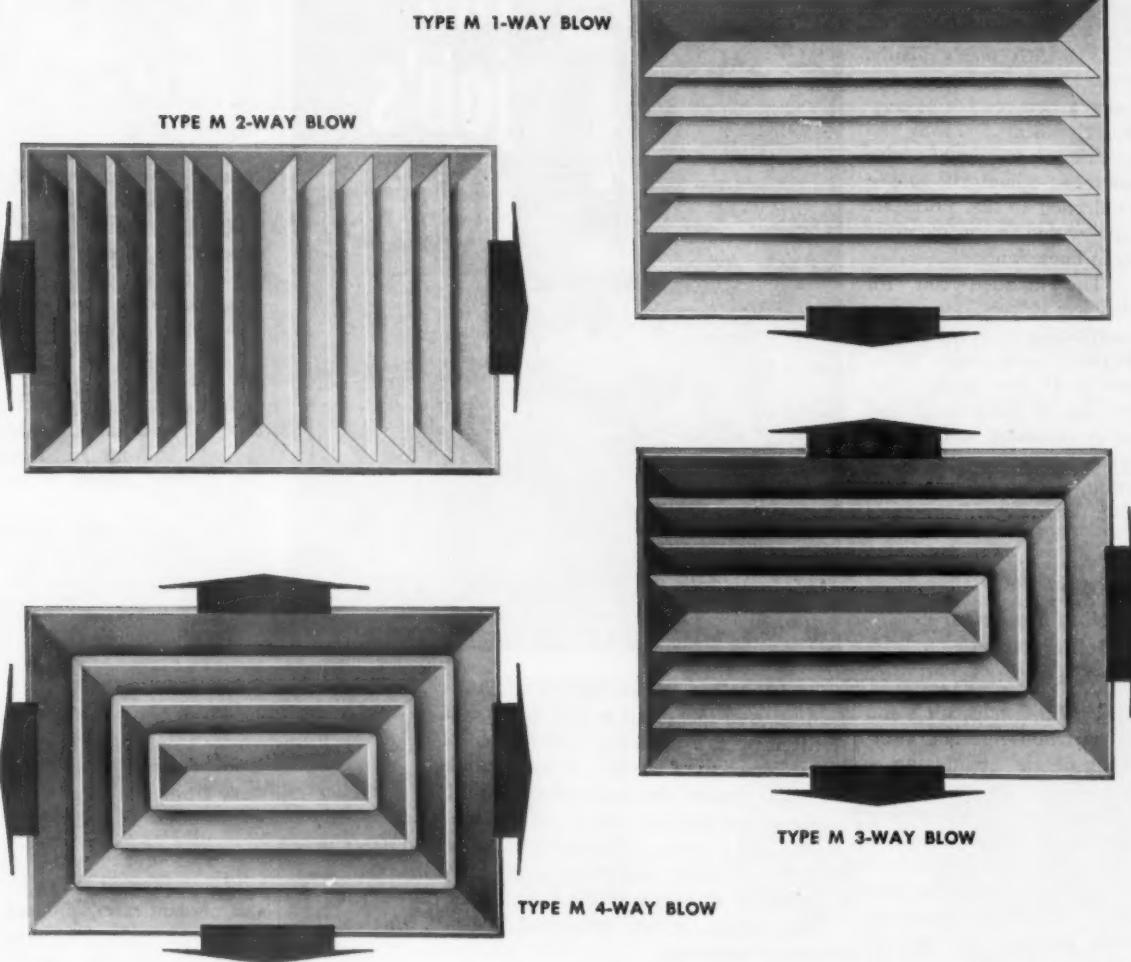
AIR-EASE

and name of  
nearest distributor

THE JOHNSON FURNACE COMPANY

2129 WEST 117th STREET, CLEVELAND 11, OHIO

**The extreme flexibility of  
Type M Multi-Pattern Diffusers  
means custom-selected air distribution**



Ideal conditions for the placement of ceiling diffusers do not always exist. Walls, partitions, exposed beams, supporting columns, light fixtures . . . big offices, small offices, corridors . . . are some of the factors that can contribute to the problem of correctly selecting and locating air distribution outlets.

With Tuttle & Bailey Type M Diffusers . . . you can select units that will distribute air in a one-, two-, three-, or four-way pattern . . . and you can select from a wide range of square and rectangular sizes. An added advantage . . . if and when requirements change in the conditioned space, it is an easy matter to install a core with a different air pattern arrangement.

T & B Type M Diffusers are attractively styled and can be furnished with four margin styles . . . beveled, flat, flush, or drop-collar . . . designed for various types of ceiling mountings.

For complete details, see your nearest Tuttle & Bailey Representative or write us direct.

**TUTTLE & BAILEY**

division of Allied Thermal Corp. New Britain, Connecticut  
Tuttle & Bailey Pacific, Incorporated, City of Industry, California

## the editor's notebook

(Continued)

bined central heating and air conditioning system far outweighs its cost and is one of the soundest investments a homeowner can make.

"In the early days of central residential air conditioning, many people thought of it as a rich man's luxury. However, in the past few years, a new concept of combined residential heating and cooling units has boomed sales and stimulated volume production so that prices are now within reach of many more homeowners."

"The installed cost for complete air condition during construction of a \$15,000 to \$20,000 home might be as low as \$7 per month. Thus the cost of installing central air conditioning with a new heating system easily falls within the budget of the average homeowner."

### Cooling Big Factor In Selling Homes

ACCORDING to a report sent me by Air-Conditioning and Refrigeration Institute, availability of air conditioning at no extra cost can be a powerful factor in merchandising low-cost development homes. This fact was brought to light by a survey of families who bought homes in a Columbus, Ohio development, one of the largest fully air conditioning "tract housing" developments ever built in the northern half of the country.

The development consists of more than 500 homes in the \$13,750 - \$15,250 price range, and offers, in addition to central cooling, such features as built-in kitchens, basements (in some models), "Medallion" wiring, and brick veneer construction.

To evaluate the relative merchandising effectiveness of the homes' features, a survey was conducted by the builder

# Zip-Zip-Zip!

## the job's done!

"...Whether it's a single template or boots and fittings in lots of 10 or 500, stacked 35 to 50 sheets high, we saw it on our Lockformer 24S Band Saw in a fraction of the time it used to take!"

That makes the Lockformer Band Saw a mighty important piece of equipment in the plant of this Chicago producer of standardized pipe, ducts and fittings. Fact is, *anything* in the shop that can be sawed at all is cut on the Lockformer Saw because they get neater cuts easier and faster... which add up to big savings.

Performance-wise, they are convinced that the Lockformer Band Saw beats anything on the market with twice its motor size (and three times its price!).

How about your shop? Could it use a performer like the Lockformer Band Saw?... 3-wheel Model 24S with full 24" throat only \$795\*; 2-wheel Model 14SM with 13½" throat only \$495\*.

\*Prices subject to change without notice.

...Get the whole story in the Band Saw Bulletin.

**LOCKFORMER**

TIME SAVING,  
MONEY MAKING  
EQUIPMENT

THE **LOCKFORMER CO.**  
Dept. A 4615 West Roosevelt Road  
Chicago 50, Illinois

In Canada: Brown Boggs Foundry & Machine Co., Ltd., Hamilton, Ontario

## the editor's notebook

(Continued)

among 58 of the project's early buyers. A key question in the survey was: "List the five factors which influenced your decision to purchase one of these homes." The nine most frequently cited were as follows:

Brick house	63.8%
Kitchen and built-ins	58.6
Air Conditioning	50.0
Basement	31.0
Location	27.6
Most for the money	20.7
Three bedrooms	19.0
Floor plan	15.5
External appearance	15.5

Commenting on these findings, the survey report noted: "The major overall reason for purchase . . . is the opinion that buyers get 'most for their money.' Strong preference for brick, air conditioning and built-ins are important specific factors in purchase."

Air conditioning is obviously one factor in the "most for the money" opinion, and hence can be considered an important, if not decisive, merchandising feature in housing of this type.

### Good Safety Program Cuts Operating Costs

ONE OF THE BASIC and integral parts of any well managed company is an active and constant safety program. Efforts to reduce accidents contribute to reductions in operating costs. I like the way Joseph S. Kearney, president, Mechanical Contractors Association of America, Inc., pointed this out in the October issue of the association's official bulletin. He said:

"When you reduce accidents, you reduce costs. These are just plain, cold, hard facts. Allow me a moment to sketch the highlights of a personal experience as evidence.

"One of our employees fell 12 ft from a scaffold in

# Luxaire

THE COMPLETE LINE

Worth  
Considerably  
More!



Priced  
to Cost You  
Less!

Unsurpassed at the competitive price . . . Every Luxaire Heating and Air Conditioning Unit gives you excellent qualities for which you would expect to pay more!

If you are seeking a price advantage, you still might rather pay a little more for the heavy construction, the uncomplicated design and the unmatched reputation for trouble-free performance that you get with Luxaire. Chances are that these qualities will cost you *no more* than you would have to pay for a unit not in Luxaire's class.

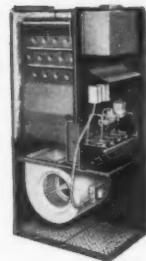
Luxaire is the most complete line of competitively priced units available — every unit competitive all along the line. Yet, whatever type or size of Luxaire Unit you choose, you need not choose between excellence and a competitive price. For Luxaire gives you both!

See your Luxaire jobber, today. Enjoy a competitive price without the disadvantage of a big stock!

## GAS



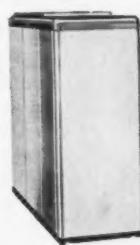
Horizontal — low and compact, assembled and wired — 80,000 to 140,000 Btu input.



Upflow — Compact, completely assembled and wired units — 75,000 to 200,000 Btu input.



Counterflow — Completely assembled and wired — 75,000 to 150,000 Btu input

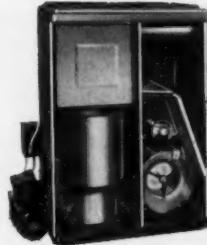


Basement — Gas or Oil Fired packaged, easily assembled — 105,000 to 260,000 Btu (Gas) — 84,000 to 192,000 Btu (Oil).



Horizontal — Heating element, blower and motor assembled in casing — 89,600 to 224,000 Btu output.

## OIL



Basement — Heavily constructed, assembled and wired — 84,000 to 112,000 Btu output.

Plus... Coal Furnaces • Unit Heaters • Conversion Burners • Summer Air Conditioning



Coal Furnaces  
3 Winter  
A. C. Sizes.  
4 Gravity  
Sizes.



Gas Fired  
Unit Heaters,  
5 Models



Gas  
Conversion  
Burners



(1) 2, 3, 4, 5 H.P. Air Cooled Condensing Units, (2) Plenum Evaporator, (3) Duct Evaporator, (4) Counterflow Evaporator, (5) Blower-Evaporator Unit.



Year 'Round  
Combination  
Units, Air  
or Water  
Cooled, Gas  
or Oil Fired

THE C. A. OLSEN MANUFACTURING COMPANY • ELYRIA, OHIO

*Luxaire* HEATING & AIR CONDITIONING UNITS

## the editor's notebook

(Continued)

March of 1958. He was permanently incapacitated and is now what is commonly known as a quadriplegic. I cannot attempt to evaluate the thousands of dollars that have been spent during two years of hospital care, doctors' fees, round-the-clock nursing and all that was necessary to provide the man with the care he deserved.

"Under the laws of the State of Illinois and in accordance with a Hold Harmless clause in our contract with the owner, the company was asked to assume the defense of a personal injury suit in the amount of \$980,000.

"At the expiration of the covering insurance, a new policy was written for a three-year period, but at a 300 percent increase in premium and with a retrospective clause. (You have probably guessed that no other company wanted to assume the risk.)

"Our company knows from experience that it pays to be safety conscious! While our operation does not seem to adapt itself to a full scale safety program, we constantly remind our foremen and the men in the field of the need for greater safety. Our experience has made them more receptive to our continual prodding. There is a new willingness to cooperate on the larger projects that provide semi-weekly or weekly safety meetings. There is a new outlook towards safety equipment such as hard hats, safety glasses, helmets for welders' helpers and a more ready recognition of basic safety practices with reference to floor openings, fire hazards, temporary stair railings at openings, etc. At long last, they see and suggest safety measures for the protection of themselves and others."

**Custom designed**

**for Sectional type  
Gas Burners...**

**THE  
MODERN  
CARRY-OVER  
TUBE**

**engineered by  
you to fit your  
product!**

Now you can get efficient, low cost lighting for your sectional type burners . . . the Modern "Carry-Over" Tube provides integral lighting of sections with a positive flame track between the burners and the pilot. The Modern "Carry-Over" Tube is a stainless steel tube  $\frac{3}{8}$  inch O.D. and is available with either single or double rows of lanced ports extending over the active lighting length. The Modern "Carry-Over" Tube is not an attachment. It is engineered by you to fit your unit and be a smoothly functioning component of your product . . . Write for complete details—no obligation.

**also** for safe, convenient and dependable "Outside Lighting" . . . check the advantages of the Modern Lighter Tube featuring "Push-Button" pilot lighting.

**WRITE FOR LITERATURE**

## the editor's notebook

(Continued)

### **Succesful Businessman Knows His Goals**

ARE YOU sure of your goal? Do you know what you are really operating a business for? If not, you should, and you should also know each step necessary to reach that goal. This is vitally important to the small businessman who is seeking to improve himself.

According to the Small Business Administration's Aid 46, the man who wants to be a successful manager is not content just to go along with his company. His goal is to do all he can to make his company grow. Furthermore, he knows where he wants to go, and he knows what he needs to do to get there. This is the mark of a successful manager.

Unfortunately, too many young men entering business today misunderstand the relationship between competence and promotion. They happily daydream about sitting behind an oversize desk, giving orders to others, and taking long lunch hours. They are often unwilling to do the things in the present which will help them reach the dreamed-about summit in the future. In other words, they are interested in the rewards of achievement, but not in the process of achievement.

A good manager not only is willing to work toward the achievement of his goal. He also has confidence in his ability to reach that goal and in the methods he is using to bring it closer. The quality of self-confidence will be discussed in next month's installment.

*Clyde M. Barnes*

Editor

*Wise  
Eskimo...*

IS TOPS  
ON TOTEM  
POLE...

HE'S GOT

AUER  
"Perfusaire"  
IN HIS IGLOO...

IT KEEPS HIM  
WARM IN WINTER...  
COOL IN SUMMER!



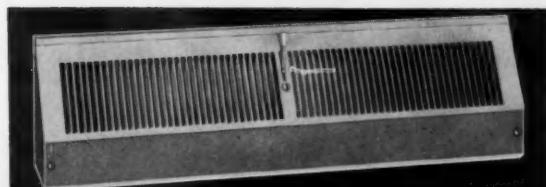
**Like the Wise Eskimo...**

Sheet metal contractors everywhere are discovering amazing savings in time, labor and costs by using Auer "Perfusaire" perimeter registers. They have found that installation time is cut in half!

Perfusaire, designed for use in or against plastered walls, inside or outside the baseboard, installs quickly...easily...without cutting or fitting. It hugs the wall without unsightly gaps...eliminates use of fillers or moldings. It is the answer to difficult uneven wall installations!

The Auer Perfusaire is equipped with a built-in damper to provide positive, controlled system balancing, making it ideal for heating and combination heating-cooling perimeter systems.

For complete details on how you can minimize installation time and increase profits with Perfusaire, ask for Bulletin P-54.



AUER "PERFUSAIRE"—the 18 inch perimeter diffuser that has the capacity of 4 to 8 foot units for heating and heating-cooling combination systems.



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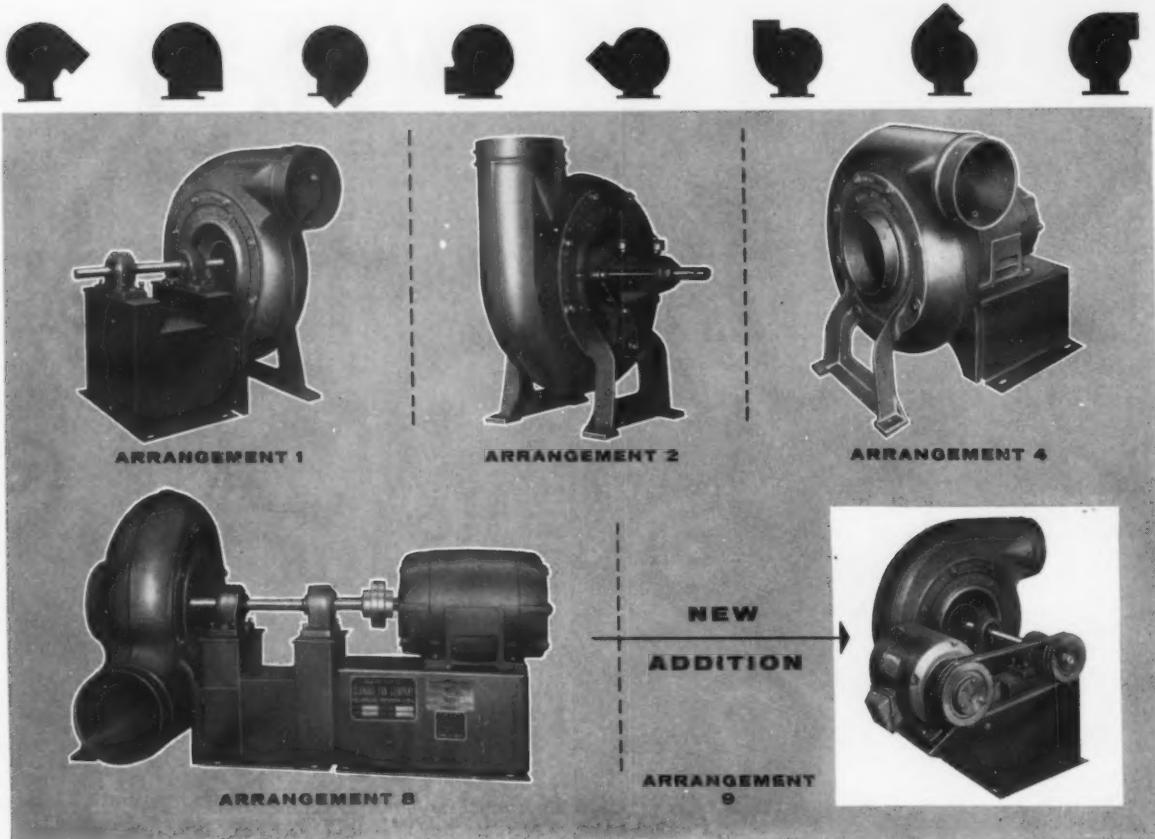
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Air Conditioning  
Products

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## WHAT'S HAPPENING . . .

### 1960 Volume Index To Be Available

CHICAGO—An index for American Artisan's 1960 issues, Vol. 97, Nos. 1-12, is being compiled and will be available soon to Artisan subscribers on request. If you want a free copy, send a note to the Editor, American Artisan, 6 N. Michigan Ave., Chicago 2.

### Select Homes For Electric Heat Study

URBANA, ILL.—A field investigation of electrically heated houses will be conducted by the Small Homes Council-Building Research Council of the University of Illinois as the result of a grant recently made to the university by the Commonwealth Edison Co. of Chicago. The study will be carried out under the direction of Rudard A. Jones, research professor of architecture and SHC-BRC director. Donald E. Brotherson, research assistant professor of architecture, will be chief investigator.

Ten electrically heated houses have been selected for the study, and data on both the houses and

(Continued on page 20)

### Sets Up Field Test For Fuel Oil Filters

NEW YORK CITY — The Technical Division of the Oil Heat Institute of America has established a sample field test for three types of fuel oil filters. A rating system provides for sample classification in one of three categories: good, fair or poor.

### Celebrate Licensing of Western New York Indoor Comfort Bureau

BUFFALO — William E. Miller, congressman from New York's 40th Congressional District, and Anthony Manguse, corporation counsel for the City of Buffalo, were the principal speakers at the Silver Shield banquet held recently in Buffalo to celebrate the licensing of the Indoor Comfort Bureau of Western New York. Some 50 warm air heating dealers-contractors from the Buffalo area who attended a 12 week technical training course to qualify for membership in the bureau received certificates of eligibility during the ceremonies.

Harry C. Gurney, general sales manager for Janitrol Heating and Air Conditioning, a division of Midland-Ross Corp., and also president of the National Warm Air Heating & Air Conditioning Association, outlined the aims, pur-

pose and concept of NWAHACA's Silver Shield program.

Officers of the newly-formed and licensed bureau are: president, Clifton D. Newell, General Gas Equipment, Kenmore, N.Y.; vice president, George Adema, N. M. Adema & Son; secretary, Bert Weigel, Rundell & Weigel; and treasurer, Alvah D. Ehrman, Ehrman's Plumbing & Heating, Inc.

### January Issue Will Feature Show Section

CHICAGO — A special show section is being prepared for the January issue of American Artisan. It will outline the activities planned for at the Chicago Amphitheatre, where the 15th International Heating & Air Conditioning Exposition will be held Feb. 13-16.

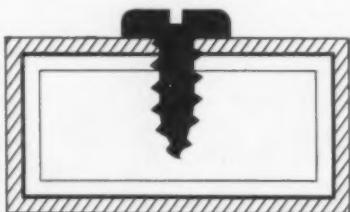
Artisan's special show section will list exhibitors and booth numbers. This special section is designed to tell you how to get the most out of the time spent at the show.

According to the American Society of Heating, Refrigerating and Air-Conditioning Engineers, sponsor of the show, more than 500 exhibits will be on display. Equipment scheduled for exhibition includes, in addition to warm air furnaces and air conditioning units, such products as humidifiers, registers, grilles, diffusers, ductwork and controls. New developments will be seen in electric heating equipment, duct heaters for warm air systems, and packaged air conditioners for roof

(Continued on page 21)

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Studs • Wood Screws



## WHAT'S HAPPENING . . .

(Continued from page 19)

### Expect Sale of Stainless to Exceed Million Tons Annually by 1967

NEW YORK CITY — Stainless steel sales in the United States will pass the 1,000,000-ton-a-year mark by 1967, according to market research studies recently completed by the International Nickel Co., Inc. A summary of the studies indicates 1967 sales of stainless steel of 1,112,000 tons, an increase of 87 percent over the tonnage sold in 1957, which, in turn, was 118 percent above that of 1947.

According to Lars R. Larson, vice president and manager of the company's general sales and marketing services department, results of the study "provide practical comprehensive selling aids for use by stainless steel producers and steel service centers in defining

and locating stainless steel markets, in forward sales planning, and in realizing the stainless steel sales potential of the years ahead."

Individual studies of various fields of consumption, including metal working equipment and construction equipment, are now being prepared. Each will show the particular industry's stainless steel consumption for the years 1947 and 1957, as well as an estimate for 1967, in 87 local market areas.

### Study Electric Heat In 10 Selected Homes

(Continued from page 19)  
the tenants will be collected in the preliminary part of the investigation. The structure of each house, house plan, orientation, size of family, and family activities related to the use of the house are among the factors to be considered. Each house will be equipped with instruments to obtain readings of indoor and outdoor temperatures as well as actual consumption of electricity for heating.

### January Artisan To Contain Directory Section

CHICAGO — American Artisan's Directory Section of Residential Air Conditioning, Warm Air Heating and Sheet Metal Products—revised and brought up to date—will appear in the January issue.

To obtain information on what products will be available during 1961, listing sheets were mailed to thousands of firms throughout the country that manufacture the hundreds of items used in residential air conditioning, heating and sheet metal work. The information is carefully classified and includes complete street addresses and trade names.

The January issue also contains its regular quota of timely and informative articles on technical, merchandising, management and news subjects.

### More Than 1000 Servicemen Tested by OHI

NEW YORK CITY — Over 1000 oil heat servicemen have taken certification examinations held in 20 different areas of the United States by the Oil Heat Institute of America. Examinations are of two types. One, the Silver Certification Examination, covers the high pressure gun type burner and controls as well as general subjects relating to service; the other, the

Leading contractors use Ramset for

Gold Certification Examination, includes low pressure and vertical rotary burners and controls as well as related service subjects.

Local groups may apply for examinations, whether or not they are members of OHI. Further information may be obtained from Oil Heat Institute of America, 500 Fifth Ave., New York 36.

## Special Show Section Will List Exhibitors

(Continued from page 19)  
top or other outdoor locations.

Of special interest to dealer-contractors engaged in housing development jobs will be the variety of shop fabricating and field installation equipment on view. This includes multiple-purpose machines, portable tools and service instruments.

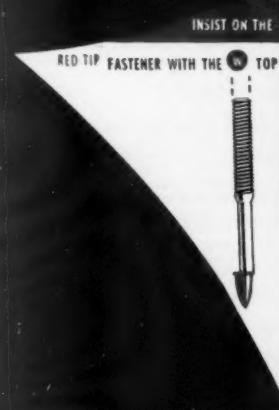
## Film Promotes Air Conditioning To Builders

WASHINGTON, D. C. — Local associations of home builders may now obtain copies of a 15-minute color film which provides fundamentals in designing for air conditioning, including the need for ventilation, insulation, orientation, roof overhang, etc., from the Air-Conditioning and Refrigeration Institute. The film promotes residential air conditioning generally and certified unitary equipment specifically.

Prepared to go along with the film is a mimeographed talk, "What You Should Know About Air Conditioning," designed to precede the presentation of the movie, as well as a small folder which members of the audience may carry home to remind them of some of the salient points made.

The film is also available to participants in the unitary certification program for local showings to other groups.

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DEPENDABLE  
FASTENING  
into concrete  
or steel



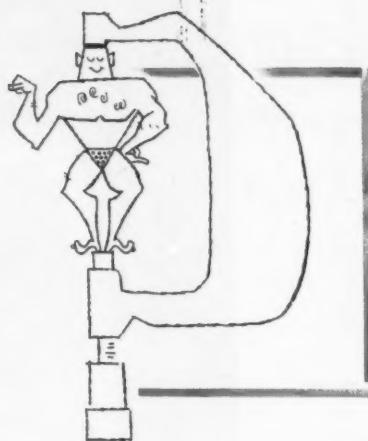
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Nashua, New Hampshire  
Slaterville, Rhode Island  
Bennington, Vermont  
Hawkridge Brothers Company, Boston 10, Massachusetts

### MIDDLE ATLANTIC STATES

Aberry Steel Company, Perth Amboy, New Jersey  
Atlas Steel Supply Company, Morris Plains, New Jersey

Benedict-Miller, Inc., Lyndhurst, New Jersey

Fisher Bros. Steel Corp., Englewood, New Jersey

International Corporation, Hillside, New Jersey

Miller Steel Company, Inc., Hillside, New Jersey

Atlas Supply Company, Inc., Bronx 58, New York

Beals, McCarthy and Rogers, Inc., Buffalo 3, New York

Brace-Mueller-Huntley, Inc., Buffalo, New York

Rochester, New York

Syracuse, New York

Ernst Iron Works, Buffalo, New York

Follansbee Metals Corp. of New York, Rochester, New York

Hansley, Inc., Brooklyn 32, New York

### EAST NORTH CENTRAL STATES

Chicago Steel Service Company, Chicago 32, Illinois  
Hubbell Metals Inc., Indianapolis 2, Indiana  
Huron Steel Company, Detroit 16, Michigan  
Meier Brass & Aluminum, Hazel Park, Michigan  
The Ohio Metal & Manufacturing Co., Dayton 2, Ohio  
Vorys Brothers, Inc., Columbus 8, Ohio  
Williams and Company, Inc., Cleveland 14, Ohio  
Cincinnati 29, Ohio  
Columbus 8, Ohio  
Toledo 12, Ohio

### WEST NORTH CENTRAL STATES

Hammond Sheet Metal Company, St. Louis 5, Missouri  
Hubbell Metals Inc., Kansas City 16, Missouri  
St. Louis 3, Missouri  
E. M. Jorgensen Company, Wichita, Kansas  
Marsh Steel Corporation, Wichita, Kansas  
North Kansas City 16, Missouri

### SOUTH ATLANTIC STATES

Eagle Roofing and Art Metal Works, Inc., Tampa, Florida  
Reynolds Aluminum Supply Company, Miami, Florida  
Atlanta 1, Georgia  
Savannah, Georgia  
Raleigh, North Carolina  
Richmond, Virginia  
J. M. Tull Metal and Supply Co., Inc., Jacksonville, Florida  
Miami, Florida  
Tampa, Florida  
Atlanta 2, Georgia  
Atlantic Steel Company, Atlanta 1, Georgia  
Hubbell Metals Inc., Marietta, Georgia  
Hill-Chase Steel Company, of Maryland, Baltimore 3, Maryland  
Vance Iron and Steel Company, Charlotte, North Carolina  
Dominion Culvert and Metal Corporation, Roanoke 5, Virginia

### EAST SOUTH CENTRAL STATES

Atlantic Steel Company, Birmingham, Alabama  
Reynolds Aluminum Supply Company, Louisville, Kentucky  
Memphis, Tennessee  
Nashville, Tennessee  
J. M. Tull Metal & Supply Co., Inc., Birmingham, Alabama  
Hubbell Metals Inc., Louisville, Kentucky  
Mid-State Steel, Inc., Nashville, Tennessee

Siskin Steel and Supply Company, Inc., Chattanooga, Tennessee  
Vance Iron and Steel Company, Chattanooga, Tennessee

### WEST SOUTH CENTRAL STATES

Hammond Sheet Metal Company, Fort Smith, Arkansas  
Little Rock, Arkansas  
Marsh Steel Corporation, Baton Rouge, Louisiana  
E. M. Jorgensen Company, Tulsa 5, Oklahoma  
Dallas 22, Texas  
Houston 1, Texas

### MOUNTAIN STATES

Ducommun Metals & Supply Co., Phoenix, Arizona

### PACIFIC STATES

Allen Fry Steel Company, Los Angeles, California  
Ducommun Metals & Supply Co., Berkeley 10, California  
Los Angeles 54, California  
National City, California  
Seattle 8, Washington

E. M. Jorgensen Company, Los Angeles 54, California  
Oakland 23, California  
Seattle 24, Washington

American Steel Warehouse Co., Portland 14, Oregon

Pacific Metal Company, Portland 9, Oregon

Seattle, Washington

### CANADA

Drummond McCall and Co., Ltd., Toronto, Ontario  
Montreal, Quebec

## Need for Licensing of Dealer-Contractors

THERE ARE MANY DEALER-CONTRACTORS working at considerable personal expense to improve the heating and air conditioning industry. Some are firmly convinced that the formation of local Indoor Comfort Bureaus is the best way. Others believe that a joint industry fund, contributed to by management, labor, manufacturing and wholesaling interests is the way. Another group has faith in codes and licensing laws.

Each of these methods is being tried in different parts of the country, but most have not been in use long enough to develop the data needed to provide the pattern that all segments of the industry can use.

Plans now under way in Ohio and Illinois call for statewide licensing of all dealer-contractors engaged in the installation of heating and air conditioning equipment, with a code that will spell out minimum operating standards that all installed equipment must meet.

There is much to be said for a statewide code and licensing of those engaged in service to the public. Other industries have used this method to protect their customers from unqualified persons, and to upgrade the service provided by their industries. Professional people such as doctors, lawyers, dentists, engineers and many others have long been required to show evidence of their skill before being granted the right to engage in business.

Where statewide licensing and code specifications have been tried in the heating and air conditioning field, one major weakness has been found to exist — that of enforcement. Cost of inspection — even a spot-check method — is expensive. Getting enough trained inspectors is another problem for small communities and rural areas.

One major advantage of a local or statewide licensing law would be a reduction in the number of "weekenders" or "moonlighters" that continually undermine the quality of installations. Unqualified people should find it difficult to enter into this business.

Qualifications for a license would include more than those skills demonstrated by a good journeyman. Mechanical skills are essential, but just as important are engineering skill, management experience and financial responsibility. The public has the right to expect prompt and reliable service when it needs it. It should have the right of recourse when equipment fails to perform as promised.

Financially responsible, well-managed firms are in the best position to provide this inherent right of the purchaser. Strong, well-written, enforced laws can provide this protection to the public and those who serve the public to the best of their ability.





# Why Operation

By S. W. Reid  
Air Conditioning Engineer  
Gilbert Associates, Inc.

CONTINUING WITH our discussions of the Standards for Rating Residential Cooling Systems, we shall consider this month the particular standard that rates constant blower operation as more desirable than intermittent blower operation. The latter is used to describe blower operation that is wired in the control circuit to operate at the same time that the cooling unit compressor is on.

In preparing a convincing case for continuous blower operation, we can find a number of reports and references to back us up. One of the most recent of these is the report on the Austin Air Conditioned Village project published by the Research Institute of the National Association of Home Builders (NAHB).

Tests reported therein were conducted in the Village in an effort to determine the relative importance of air motion, relative humidity, air temperature and mean radiant temperature in producing comfort. With respect to air motion, 100 percent of the 18 partici-

pating families registered complaints of stuffiness, dampness and sweating when room conditions were at 77 F and 50 percent rh, with no air motion. There were no complaints at all when air motion existed with identical temperature and humidity.

#### How Important Is Air Motion?

The very definition of comfort air conditioning, as given in the ASHRAE Guide, includes air motion as the fourth of four essential factors. The other three factors with which air motion ranks in importance are temperature ranking first, humidity second and quality third.

The essential factor of air motion is present only when the blower is in operation. Therefore, an air conditioning system which is characterized by intermittent blower operation is really only a part-time system, in accordance with our definition. The American Artisan Standard rates part-time blower operation as Fair. A system

with continuous blower operation is classified Good in this category.

The subject of air motion and its relationship to comfort has been of considerable interest for many years in the warm air heating field. Early warm air heating plants depended upon the difference in weight between warm and cool air to produce the circulation needed to carry heat throughout the house. These systems, although they represented an improvement over the parlor heater type system, left much room for improvement.

#### Little Help From Early Fans

With the availability of electric power in homes, the booster fan was added to the gravity furnace. The system was still considered a gravity system, and consequently the booster fan control was set to operate the fan only near or at peak conditions, when it was felt that gravity circulation was poor.

The result of this operation was not complete satisfaction. Rooms that were most nearly comfortable

# Constant Blower

## Is Preferred

by gravity action alone became overheated during fan operation. Rooms that were not heating well at all under gravity action were treated to an initial blast of cool air as blower action forced the stagnant cool air from ducts that were supposed to supply these rooms.

Furthermore, as soon as the booster fan operation ceased, the rooms which depended upon it for heat cooled rapidly until the next operation of the booster.

### More Heat Input Inefficient

Since the operation of the gravity system depended upon a temperature difference in air, some problems in distribution were solved by raising the furnace heat input. The resulting hotter air in the bonnet had more of a tendency to rise through the various leader ducts than did cooler air.

Although such operation produced the thermal head needed for circulation, it also resulted in poor efficiency, since losses from the furnace and flue were considerable. Furthermore, basement temperatures near the furnace were excessively high.

When the packaged warm air furnace became available, it was handled by dealer-contractors whose experience had been largely with gravity systems. These men were, in their field, pioneers of a sort, and therefore cannot be judged by what we know today. However, many of them tried to solve problems with forced air systems by using the same techniques they

had learned from working with gravity systems.

For instance, if a customer complained that certain rooms were not heating, the dealer, in keeping with his gravity experience, would raise the setting of the fan switch to, perhaps, 200 F. He did not stop to think that the cause of the cold feeling might have been the long fan *OFF* period, which allowed air in the ducts to cool down.

The setting of 200 F meant that the furnace bonnet had to reach this temperature before the fan would start. The result was an overheating of the furnace and stack, and an excessive loss of heat to the basement. The circulation of hot air to the room would satisfy the thermostat in a relatively short time, causing the blower and burner operation to cease. Needless to say, heating by short blasts of hot air did not advance the art.

Another "solution" to the feel-

ing of cold even at proper room temperature was to increase the flow of air. This, like the raising of the air temperature, enabled the system to satisfy the thermostat more quickly and, hence, shortened the time of blower operation. During this period, the warm air system in many areas fell to low regard as compared to heating systems in which there was a characteristic leveling of the heat output and not merely an *ON-OFF* type of operation such as warm air seemed to provide.

### Research Gave Solutions

Research in warm air heating provided the solutions to many problems which plagued the industry in those early days. Among the principles of good practice that were developed is the principle of continuous air circulation. CAC is a method of adjusting a warm air furnace to achieve maxi-

TABLE 1 — REEVAPORATION and its effect on relative humidity due to coil arrangement in relationship to heat exchanger location

Coil Located Above Heat Exchanger	Relative Humidity* (in percent)
Vertical Coil	12
45 deg. tilted Coil	18
Horizontal Coil	24
Coil Located Below Heat Exchanger	
Horizontal Coil	19

\*Average change in actual relative humidity between On and Off cycle.

**continued . . .**



## **Studies Show Need for Air Movement**

mum blower operating time. In general, the aim is to have continuous operation whenever the outside air temperature drops below the 35 to 40 F range. Above this range blower operation is intermittent.

### **What Is Accepted Procedure?**

The procedure for adjusting fan speed, burner input, fan and limit switches and thermostat for CAC is described in the ASHRAE Guide and is almost universally accepted as the proper way to adjust a warm air system. Although blower operation is not 100 percent continuous as is advocated by our standard for cooling, it is almost so and easily could be with those methods of distribution wherein conditioned air is mixed with room air in a manner that keeps air at near register velocity from reaching room occupants.

The importance of air motion as a factor in air conditioning has been well established by many studies. One such investigation reported by Charles Sheard (University of Illinois Bulletin, Vol. XXXVI, No. 76, "Thermal Interchanges Between the Body and its Atmospheric Environment") showed that ". . . at an air temperature of 70 to 72 F, an increase in air movement from 20 to 100 fpm is equivalent, approximately, to a drop of 7 deg in operative temperature.

### **Air Velocity and Comfort**

"At higher air temperatures, in which the air is warmer than the

skin, increasing the velocity of air from 20 to 200 fpm increases the heat gained by convection and increases the heat lost by evaporation, with the result that the limit of evaporative regulation is lowered. It has been found that, at an operative temperature of 93 F, the body can adjust itself to a relative humidity of 95 percent with an air velocity of 100 fpm, but only to a relative humidity of 85 percent with an air velocity of 17 fpm. (Operative temperature is a concept introduced by Gagge, et al. It is a function of the air temperature and the mean temperature of the surroundings. It is close to the temperature measured by a globe thermometer.)

"At a temperature of 106 F, these conditions are reversed: the body can adjust itself to a relative humidity of only 10 percent with an air velocity of 100 fpm, and to a relative humidity of about 20 percent with a velocity of 17 fpm."

### **Equivalent Conditions Noted**

Another study of the effect of air motion upon comfort was mentioned in the article of this series which appeared in the September 1960 American Artisan. From a series of curves comprising Fig. 1 in that article one sees that a person can tolerate, without discomfort, air at 73 F moving at 30 fpm in a 75 F room. For the same degree of comfort, the temperature of the moving stream would have to be raised to 73.7 F if the velocity were doubled to 60 fpm. With the velocity at 120 fpm, the air motion could be tolerated by

people sitting in the room only if the air were at the room temperature of 75 F.

D. W. Nelson, in whose report the curves were originally presented (University of Illinois Bulletin XXXVI, No. 76, "Introduction and Diffusion of Conditioned Air in Rooms") states, "There must be air movement for comfort, but it should not come in puffs exceeding 150 to 200 fpm momentary velocity, which would disturb light objects such as paper or hair. Neither should it have a combination of velocity and temperature difference that registers as a sensation of draftiness."

### **Minimum Air Velocity**

After discussing the curves referred to above (which show the upper limits of air velocities that are to be tolerated for cooling conditions), Mr. Nelson goes on to state that, "There are also lower limits of velocity for comfort, as evidenced by the increase in comfort due to slight air motion over the face produced by a hand when seated in an insufficiently air-conditioned room. This air movement should be sufficient to carry sensible heat from the body by convection, and to aid in the evaporation of moisture from the body surface.

"Provided the temperature and relative humidity are properly adjusted this minimum air movement is low, probably 15 to 25 fpm." To this we might add that an air conditioning system with fan and compressor shutoff cannot provide even the 15 to 25 fpm air velocity

Mr. Nelson found to be necessary.

Let us turn to the 1960 ASHRAE Guide as our final reference in support of the American Artisan Cooling Standard calling for the continuous operation of the blower in an air conditioning system. In a chapter titled "Physiological Principles" there is an interesting chart relating to effective temperature. The chart (page 71) embodies the major variables of temperature, humidity and air motion which an air conditioning system, by definition, is said to control.

### Support of Standards Rating

This chart was developed from studies at the ASHRAE Research Laboratory involving trained subjects who compared relative warmth of various air conditions in two adjoining conditioned rooms by passing back and forth from one room to another. Of interest to us this month is the effect of air motion upon comfort. To visualize this, suppose we use the ASHRAE effective temperature chart and follow line AB, which connects the temperature of 76 F on the dry bulb line with the temperature 62 F on the wet bulb line.

Line AB intersects a line for 100 fpm air velocity at a point that falls on the 69 F effective temperature line. Other combinations of dry and wet bulb temperatures which fall on any line passing through this intersection or any other point on the 69 F line will produce the same sensation of warmth.

### Results of Blower Cycling

Now let us see what happens if we decrease air motion from 100 fpm to 20 fpm. Starting at the point of intersection of line AB with the 69 F effective temperature line, we would move to the right until line AB intersects the 20 fpm line. At this new intersection it would be noted that a new effective temperature of about 70.5 F would be established. In other

words, an 80 fpm reduction in air velocity produced an effective temperature rise of 1½ degrees.

This gives us a graphical picture of the results of blower cycling. Obviously, when the blower stops and air motion ceases, the occupants of a room would experience a sensation of temperature rise even though the actual room temperature and humidity might remain unchanged.

One who is not familiar with the operation of air conditioning equipment might ask at this point, "Well, if constant blower operation is so essential to good air conditioning, why even consider cycling the blower with the compressor?" The answer is that cyclic blower operation does have two possible advantages. One is that the reevaporation of moisture from the cooling coil during the compressor OFF cycle is minimized. The other is that there is some saving in the cost of power needed to operate the blower.

### Evaluating a System

The actual worth of the possible advantages for a particular system depends upon several factors. If the air conditioning unit is sized properly for the load, (not oversized), the compressor will operate most of the time under peak conditions, and therefore the periods when reevaporation will take place will be well scattered and of short duration.

Another chart, based on research at the University of Illinois

and reported in Bulletin XXXIV No. 13 is entitled "Research in Summer Cooling at the University of Illinois" by M. K. Fahnstock. It plots data taken during an actual test and serves to illustrate the advantages of continuous blower operation. If the cooling unit were oversized, compressor cycles would occur throughout the day instead of early in the morning and late in the evening, as brought out by this research data.

Another factor in moisture reevaporation has to do with the physical construction and arrangement of the cooling coil. This was studied in conjunction with the Austin Village project. The NAHB report states that the humidity range between ON and OFF cycles of the compressor was traced, in part, to reevaporation of water condensed on the coil. Table I gives average results which relate coil arrangement to reevaporation.

If the blower were cycled with the compressor, the changes in relative humidity during compressor OFF cycles would not have been as great. This slight advantage, however, was not sufficient to overcome the advantages of constant blower operation.

The additional advantage of cyclic blower operation which has to do with power savings seems to be of little interest to owners who, by the very fact that they are living in air conditioned homes, demonstrate that they are willing to spend money for comfort.

### What Is 'Air Conditioning'?

**True air conditioning provides comfort in all seasons, according to the American Society of Heating, Refrigerating, and Air-Conditioning Engineers. ASHRAE defines air conditioning as:**

**"Air conditioning is the process of treating air so as to control simultaneously its temperature, humidity, cleanliness and distribution to meet the requirements of the conditioned space."**



SUMMER AIR CONDITIONING equipment and its components are part of every new salesman's training program.

By W. Ed Bogen  
Bogen Inc.  
Columbus, Ohio

THE INITIAL PHASES of our training program for new salesmen—presented in last month's issue—bring us up to what might be called the detailed training period. It is probably the most important part of the entire training program.

The third of our four-phase training period takes up engineering. The salesman's ability to properly select the equipment

**How to select the right pieces of equipment to best serve the prospect's needs involves knowledge of capacity variation, styles available, application data, installation technicalities, etc.**

needed and to engineer ductwork, etc., will have a direct bearing on the profit the company makes, the number of satisfied customers, the amount of work he sells, and last, but not least, the amount of commission he will make.

It is not our intention to make finished engineers out of all of our sales people, but rather to enable them to use the simple everyday things necessary in our business.

First under the heading of engineering is the ability to calculate heat gain and heat loss. There are many different ways of figuring these. We use the National Warm Air Heating and Air Conditioning Association's forms in all our estimates.

They are simple and easy to use as a standard so that everyone is talking on the same basis. This helps to keep misunderstanding to

## Train Salesman to "Know All About"

## Your Products"



PRODUCT INFORMATION is provided by W. Ed Bogen (right) to enable new salesman to compare various models, their application and features of operation

a minimum and increases the speed of estimating.

In our training program we give the new man sets of actual plans of jobs that have already been figured and let him figure them with our help until he becomes proficient.

### Learn Construction Practices

We have our new salesman travel with our installation superintendent for about a week to learn something about the wide field of construction practices. He sees jobs going in and just how houses and buildings are built.

NEW SALESMAN can sell with confidence that equipment will be properly repaired when necessary

There is often a great deal of difference between blueprints and the actual building, so we show our new man how to look for such things as the direction the joists run, where wall stacks can be put up and where they can't, placement of registers, etc. Along with this on-the-job training, local code regulations are pointed out so he will not sell jobs which would be in violation of code

specifications.

We also give our new man some simple service training because we know that often in this line a little knowledge will give the customer confidence. We let our new man ride with a serviceman for a couple of days to get familiar with this aspect of the business.

For the benefit of our new employees (and older employees too)





## Training Salesman continued . . .

we have regular open discussions between our sales people, service manager and installation department on the pros and cons of various installation techniques. These sessions are very beneficial, since materials and methods are constantly changing.

Our next step in the training program is an introduction to the library. Here the new salesman is indoctrinated in the vast file of references on equipment capacities, design data, etc. Once he has learned to use this information effectively, it will save many questions and lots of his time.

### Product Knowledge Training

By this time, the new salesman will have spent a little less than two weeks with us. He is now ready for the final training phase, that of product knowledge. This is where we teach him about the specific benefits he will sell and the specific sales points of our line of furnaces, air conditioners, etc. We

use manufacturers' data in the form of books, slides, models, sales presentations, etc. for this lesson.

This product knowledge phase is a never-ending program in our company with all of our salesmen. New products and application methods are always coming out. We feel that a continuing review of the whole product line keeps the salesmen aware of the full line of products and the variety we have to offer. Our company has a short review at every sales meeting as well as special courses several times throughout the year devoted to this subject.

### Develop Smooth Presentation

The final step is to help our new salesman build his sales presentation. Here the man will have to exert his own personality, but aids such as presentation books, models, job addresses and pictures, etc. are given to him and we help him put it together into a smooth presentation.

We teach him to build this presentation carefully—so it can be used effectively and be presented quickly and thoroughly—and to take full advantage of the points in which the prospect indicates the most interest.

We use a three-ring binder for this presentation, putting into it all the necessary sales material. Specification sheets and sales sheets on each product we sell are included. These give the features and physical size of each product.

### All Information in Binder

Lists of installations are provided as ready references. We also include photographs of our place of business and the company trucks to show the size of our business and service departments. When ready, the three-ring binder includes all the information necessary to sell and price a job.

The man is now considered ready for field training. We assign him to work with several of our top salesmen for a few days. He is with them on actual sales calls and see how they handle a presentation and, after the sale, how they follow through.

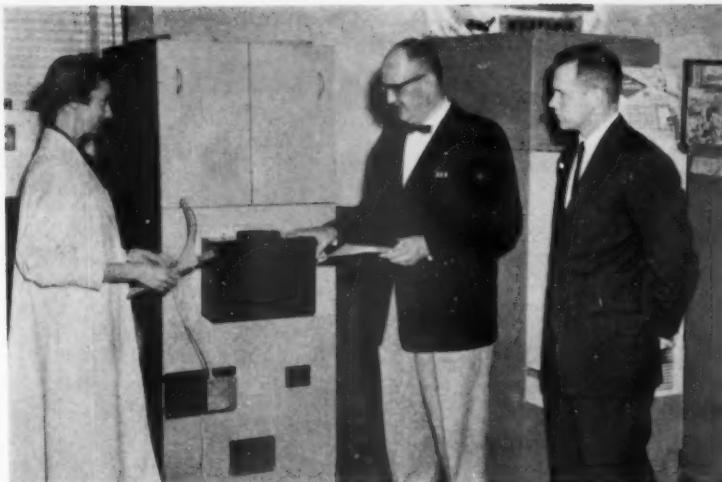
We now believe the new salesman is ready to attempt his first sale. Our policy is to give him the easier prospects at first and gradually work him into more complicated jobs.

### Salesmen Usually Specialize

We have found that each of our salesmen tends to specialize: some sell large builders; others prove particularly good with small builders. We have several others who sell practically nothing but



NEW SALESMAN is shown how sheet metal requirements are packaged according to work orders



**SELLING A PROSPECT** on features of equipment through the use of sales literature and showroom model is handled by sales manager for the benefit of the new salesman

modernization work in existing houses.

All of our salesmen sell well in the air conditioning field. However, again their interests tend to be in either the small commercial or the residential application.

But we do insist that our salesmen bid and sell all types of heating and air conditioning because the buying seasons for the various specialties seem to come at different times of the year. We do this to keep them aware of the company's over-all operation and to keep them trained in all of its service.

Time spent training a new salesman thoroughly will pay dividends in the long run even though it means getting practically no return on your investment for a period of at least three weeks. Often for the first six months there is little return. However, after this period, and if the right man has been hired, then both the salesman and the company should enjoy a long, happy and profitable relationship.

**INFORMATION** presented in this article was also presented at the 6th annual convention of the National Warm Air Heating and Air Conditioning Association.



**SHEET METAL SHOP** tools are explained to provide sales ammunition when skill and production ability become a factor



**TWO DAYS TRAVELING** with serviceman provides first-hand knowledge of service problems, how they are handled and how to avoid many of the causes



INSPECTION OF FURNACE by Jerry Blindauer for correct capacity, burner components and other equipment shown on packing list is first step after crate has been removed

LOCAL ASSOCIATIONS are the most effective way to improve the heating, air conditioning and sheet metal industry's position—this is the belief of Howard Blindauer, Blindauer Sheet Metal Co., Green Bay, Wis. It is the main reason for his serving as secretary of the Green Bay Heating Association for a number of years. An active association, it stages monthly programs, which he helps prepare

with the aid of its other officers.

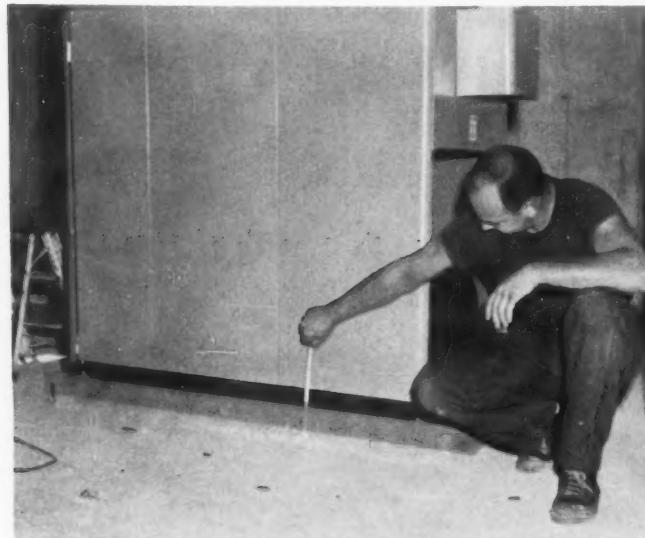
A general subject is selected each month for presentation and discussion. One month it may cover the advantage of a perimeter warm air heating system over other types of heating systems.

Such a program would include a review of air flow pattern characteristics, sources of high heat loss or gain, how to avoid drafts, temperature difference

between rooms and between floor and ceiling levels, adjustment of fuel burner efficiency, return air locations, balancing air flow, and the many other features that enter into proper installations and service.

As the leader of such a discussion, Mr. Blindauer begins on familiar ground by using his own practices as the opening gambit in the meeting. Use of personal experience also helps Mr. Blindauer in guiding the discussion.

The Blindauer company begins a heating installation by pouring a concrete foundation for units located in the basement. The foundation is adjusted to irregularities in the floor so that it is a minimum of 3 in. above the floor, with the top of the foundation smooth and level.



THREE-INCH CONCRETE BASE plus vibration absorbing pads provide a level foundation for basement installations

#### Duct Sizes Regulated

Ducts are sized in accordance with the manuals of the National Warm Air Heating and Air Conditioning Association. They are hung securely to floor joists, with a hanger installed on every other joist and fastened securely to the duct.

Supply air openings are located

# His Way of Making Heating Installation

Information presented for discussion at local association meetings proves of vital importance to membership

on the outside wall near the points of greatest heat loss or heat gain. Return air openings are put in each room except the bath, and have a capacity of 120 percent of the air supplied. It's the Blindauer company's opinion that drafts and high velocity air movements are avoided by having large and frequent intake openings. Return openings are taken from each room in which supply air outlets are located, except the bath. This is because of its small size.

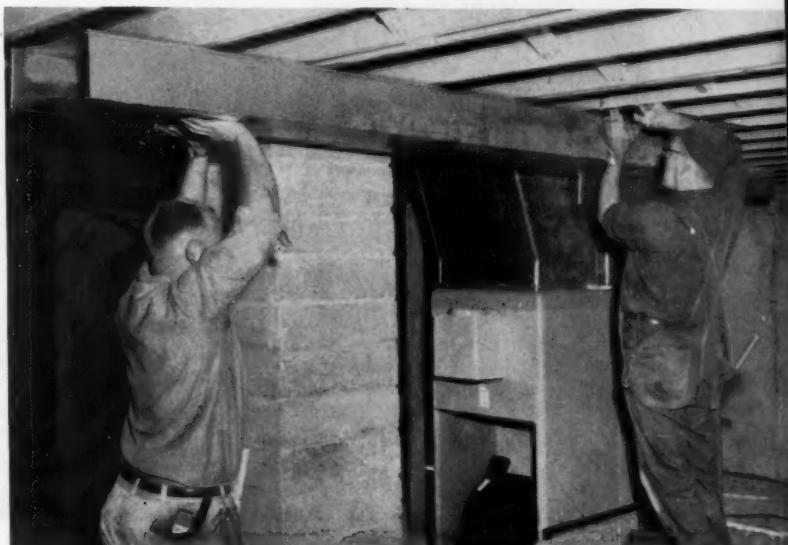
## Use Joist Space

Joist space is frequently used to return air to the furnace. The joist space is panned with 2 ft sections of flat sheet metal, using a Pittsburgh type lock where it is connected to the adjoining section. The pans are nailed on 2 in. intervals to form a tight joint with the wood joist.

When the furnace is first placed in the basement, its components are checked against written specifications for the job. The packing list that came with the furnace is checked against the various parts supplied by the manufacturer. In addition, the furnace is checked for capacity, for the proper spud



PERIMETER LOCATIONS for supply air openings are selected on a basis of sources of heat gain and heat loss and are placed to offset maximum heat gain and heat loss such as that created by large glass areas



SUPPLY DUCTS are securely fastened to joists, with duct hangers installed on every other joist

# Good Installing Methods Reviewed For Competition



RETURN AIR OPENINGS are located on partition walls of each room



PANNED JOIST SPACE for return air is accomplished with 2 ft lengths of flat sheet metal connected at each joint with a Pittsburgh type lock and nailed at 2 in. intervals

continued . . .

size in the case of gas, proper nozzle size in the case of an oil burner.

Blower belts are checked for tension, blower motor bearings are lubricated and all panels checked to see whether they are in their proper positions and securely fastened.

## Procedures Are Reviewed

Variations to this procedure would then be reviewed by the members attending the association meeting and alterations noted when conditions warrant their use. In this way, all segments of the industry profit as does the public.

The Green Bay association at the present time is made up of 38 members, most of whom attend regularly and frequently bring guests. Meetings are held once a month for 10 months every year, with July and August bypassed. In addition to regular meetings, an annual picnic and officers' banquet are held.

Programs are slanted toward the benefit to the public, and through public opinion, their benefit to the association and membership of the industry.

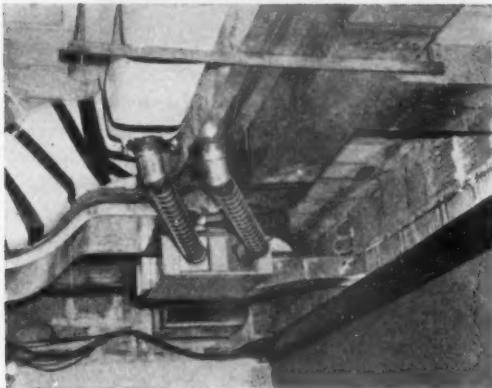


GREEN BAY HEATING Association's secretary, Howard Blindauer, and his wife go over plans for forthcoming discussion by preparing meeting notices

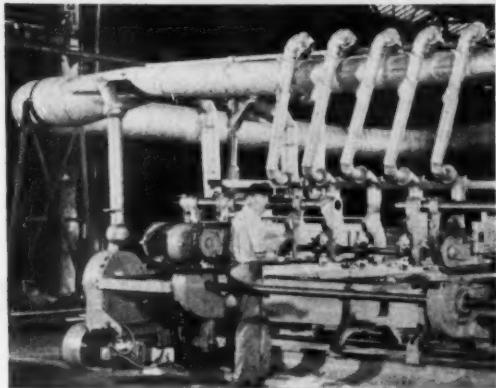
# AMERICAN ARTISAN

# Sheet Metal Section

Ventilation



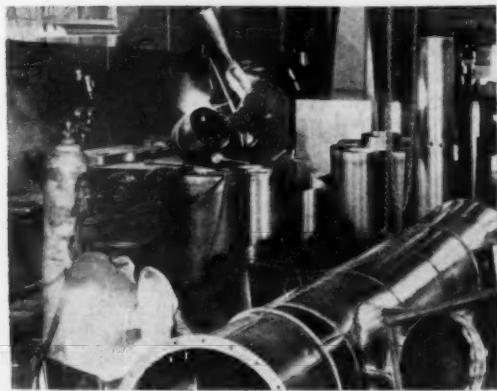
Dust Removal



Architectural



Specialties

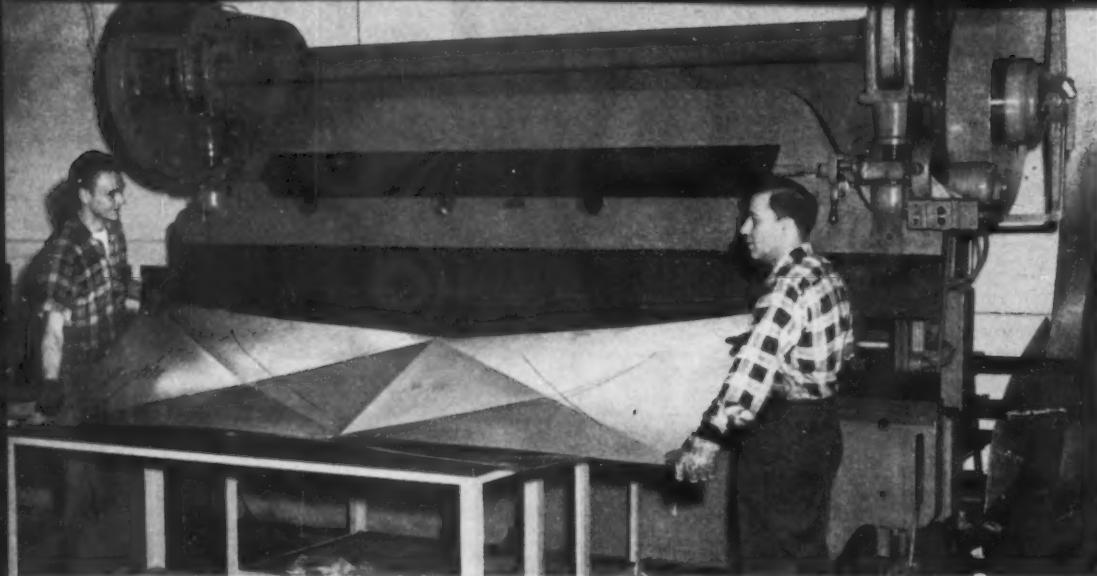


How Contractor Fabricates High Velocity Ducts . . . . . Page 36

Church Cross Constructed to Withstand Hurricanes . . . . . Page 40

How A Training Program Sparked Contractor's Growth . . . Page 44

Metal Spires Favored for Low Maintenance Cost . . . . . Page 46



DOUBLE CROSS BRAKING at the power brake provides rigidity and an attractive design for rectangular ducts. Two portable work benches are used, one for a supply of sheared-to-size sheet metal and the other for storing the completed panels until they are moved to the insulation department

# How Contractor Fabricates High Velocity Ducts

**Here's a sheet metal contractor  
who devised  
special production-line techniques  
to coordinate  
good engineering with skilled installation**

HIGH VELOCITY air distribution systems in large buildings for both comfort air conditioning and ventilation have gained wide acceptance in the past few years. Much of this acceptance is due to the development of blowers specifically designed for this purpose and to sound attenuation of air both within the duct system and at the points where the high pressure air is reduced into the low velocity air systems.

Increased favor for high velocity air distribution systems is the result of better design and installation procedures, many of which are the contribution of sheet metal contractors throughout the country.

#### Tight Joints Are Essential

Jack Lantry, president, Universal Sheet Metal Corp., New York City, puts it this way: "It's not so much the problem of building a

duct to fit the space provided, it's the job of making each duct joint tight and to see that the sections are securely fastened together.

"To achieve these objectives, there must be sufficient room for the mechanics to perform their work. Our mechanics, both those on the job and in the shop, have developed a skill of their own that helps achieve a system that performs the way it's been designed and with a minimum of air leakage."

Shop fabrication at Universal is accomplished along a production line basis that starts at the sheet storage area. Here a bundle of sheet metal of the specified gage and width is lifted from stock by an electrically operated crane, and moved along its overhead tracks to a mobile bench, where the bundle is unloaded and its tie bands removed.

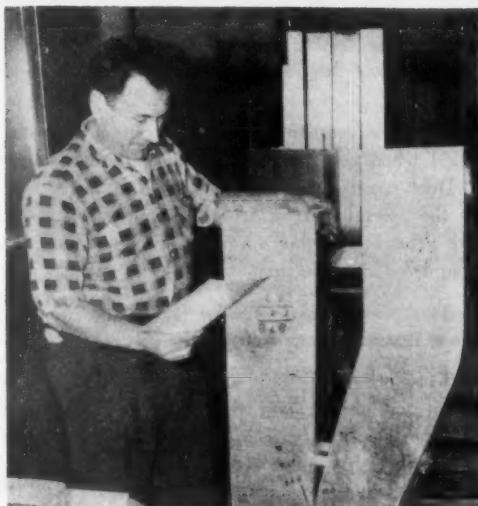
#### Master Schedule Needed

From the end of the storage area the sheets are delivered to either the power shear or to the pattern layout benches. Elbows, wyes, transitions, duct sections, etc. are fabricated according to a master schedule that keeps the correct size, shape and quantity flowing according to job site requirements.

After the flat sheets for the duct sections have been sheared, they are moved to the notching machine and then to the power brake, where they are formed into the desired shapes. From the power brake, formed panels for rectangular duct are moved to the lock forming machine, then on to the



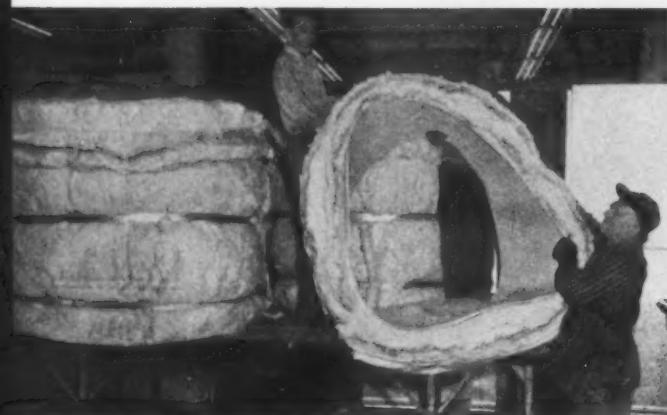
FITTING AND TRANSITION pattern layout bench where Matthew Lawrence, engineer, checks schedule of parts with Eddie Lewin, layout specialist



DESIGNATION MARKING for Y branch is checked by shop foreman Dan Rostolder



BIG AND LITTLE long radius elbows are designed to provide low resistance to air flow



MESH LINED SOUND ABSORBERS are fabricated and stored until the exterior lining is ready for application

area where acoustic lining is applied when required.

Duct panels are next moved into the assembly area, where they are brought together to form the completed duct section.

#### How Round Ducts Are Made

Sections of duct that are to be fabricated into round ducts are transported directly from shear to the power slip roller where they are rolled to the correct diameter, after which the longitudinal seam is welded airtight for high pressure systems, riveted or lockseamed for conventional systems.

Fittings for the high pressure duct systems that require welding

are moved directly from the layout benches to the shop tools required to roll the duct into its proper dimension. They are then delivered to the welding department, which seams each fitting section and joins the individual sections to complete the fitting.

Completed duct sections and fittings are next moved to the storage area to wait for transportation to the job site.

#### Why Lining Sealer Is Used

When acoustic-lined duct sections are delivered to the storage area, they go through an additional finishing operation. The ends of the duct are sprayed with a sealer to prevent the duct lining from

raveling (due to air movement within the duct).

Each piece of duct and fitting is next checked for identification markings first placed on the metal at the layout bench or shear. This identification is obtained from both the original job order and the use of symbols to designate the exact location in which each piece is to be used at the job site.

Fabrication of duct sections for high velocity duct systems involves a number of components not normally used in low velocity ductwork. One of these components is a sound absorbing section installed at the blower discharge point. Universal Sheet Metal recently fabricated a sound absorbing section for attachment to the outlet of a 47 in. diameter blower discharge transition.

#### Suggested Classification of Duct Systems

According to ASHRAE, no exact limits of classification for high, medium or low pressure systems has been reached, thus there is no exact definition of each of these systems. However, suggested ranges of static pressures in the duct system for classifi-

cations are: high pressure 4 to 8 in. wg, medium pressure 1½ to 4 in. wg, and low pressure up to 1½ in. wg. (These values are for pressures existing in the duct, not total pressure at the blower. See ASHRAE 1960 Guide, Page 308.)

continued . . .

## Fabrication Tech

### Problems of High

velocity duct systems

by WALTER R. HARRIS

Universal Sheet Metal Co., Inc.

## niques Solve Acoustical

### Velocity Duct System

When this work had been completed, the sections were covered with a sheet metal covering to provide exterior protection and to give rigidity to the section. A flexible connector made from angle iron and coated fire resistant cloth material was installed between the blower discharge and the sound absorbing section to prevent transmission to the ductwork of noise due to vibration of machines located in the mechanical equipment room.

#### Cite Value of Static Regain

Universal's engineers point out to customers the advantages that can be achieved by the application of static regain in the design of high velocity duct systems. Latest data available through the ASHRAE guide shows that about 85 percent of the original velocity pressure can be regained. This may easily account for as much as 1 in. static pressure (wg) and therefore can be used as the safety factor in the selection of motors and blowers for the job.

The necessity for proper sound control through sound attenuators located immediately after the blower and the use of sound-treated

acoustically-lined ducts is also pointed out by the company engineer when he works with consulting engineers who write the specifications.

#### Maximum Velocities Specified

Other recommendations include air velocities in main trunklines kept below 4000 fpm. Maximum velocities for branch ducts are 2000 fpm to achieve high efficiency. In special cases velocities may go as high as 6000 fpm.

A round figure for friction loss is about 1 in. per 100 ft. When this amount is exceeded a larger duct should be used to prevent excessive power consumption.

In designing the high pressure duct system, round ducts are used wherever practical. However, when rectangular ducts are more suitable due to space conditions, the aspect ratio of rectangular ducts is not permitted to exceed four to one, and preferably a lower ratio.

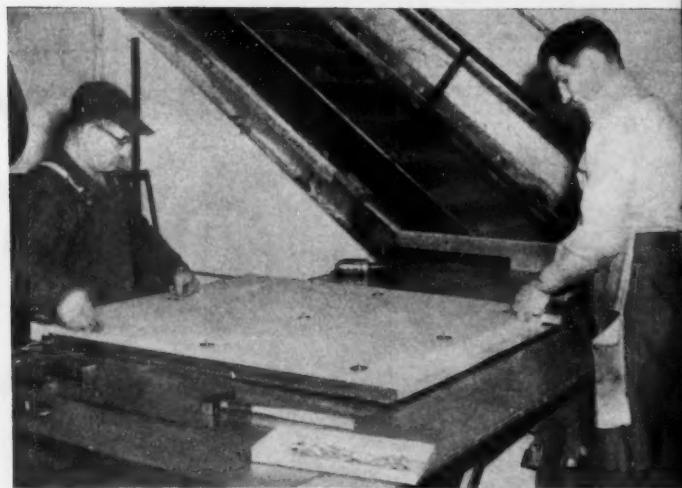
In the case of round ducts, turning vanes are never used. However, long radius elbows provide low static pressure loss.

Duct dampers are usually avoided. Capacity dampering is attained at each outlet through

the use of manually adjusted dampers.

Sheet metal used for high pressure ducts is usually 4 gages heavier than that normally used for low pressure duct systems.

By following these recommendations, consulting engineers have found their job easier and Universal Sheet Metal has solved some of its fabricating and installation problems.



INSULATING OF PANELS for duct section is quickly achieved by the use of two mechanics operating on opposite sides of the work bench



INSULATED DUCT ENDS are sprayed with a coating to prevent raveling due to air movement through the ducts after the system has been completed



# How to Construct A Church Cross That Will Withstand Hurricane Winds

By C. DeHOOG Jr.  
Blattmann Sheet Metal Works, Inc.  
New Orleans

**The base, uprights and arms  
are fabricated  
as separate components in shop, assembled  
at job site,  
and the cross hoisted into position.  
The completed cross is  
watertight and rigidly self-supporting**

AS THE HIGHEST ornament on a church, the cross must be built to stand the stress of hurricane winds and other forces of nature's elements combining to distort its appearance through expansion and contraction. It must also be constructed to resist erosion, which would tend to weaken the structural frame and its weatherproof coverings.

When we were asked to replace the original cross on St. John the Evangelist's Catholic church at Jeannerette, La., we copied only the architectural design. From that point on, we fabricated the base, the uprights and the arms to be rigidly self-supporting and watertight.

The cross, from its base to its tip, is 21 ft, 6 in.; and the span at the arms is 7 ft, 4 in. The cross was fabricated of red brass pipe for the main structural portions, with a weather protecting cover of 0.032 commercial bronze sheath.

To facilitate shop fabrication and job site erections the cross was built in three major sections: 1) the cross; 2) the base; and 3) the base cover.

#### Joints Secured by Brazing

The main upright for the cross was fabricated from 2 3/8 in. OD 85 percent red brass pipe, 15 ft 1 in. long. Two ft 11 1/8 in. from

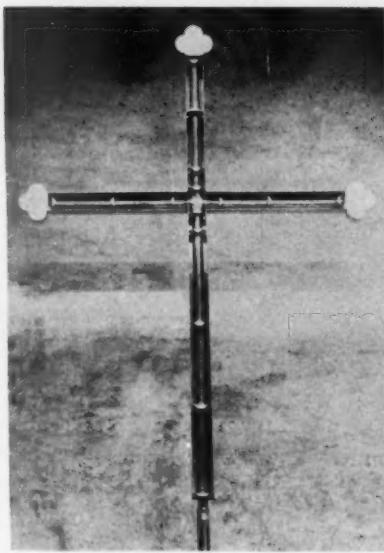
the top end of this pipe, a hole was drilled to accommodate the 1 1/4 in. brass pipe that forms the arms of the cross.

These arms were fabricated from one section of 1 1/4 in. OD 85 percent red brass pipe 5 ft, 1/2 in. long. The 1 1/4 in. OD brass pipe was centered and the two pipes brazed together to form a secure joint. Sufficient welding material was placed around the weld joints to provide the additional strength necessary to absorb abnormal stresses.

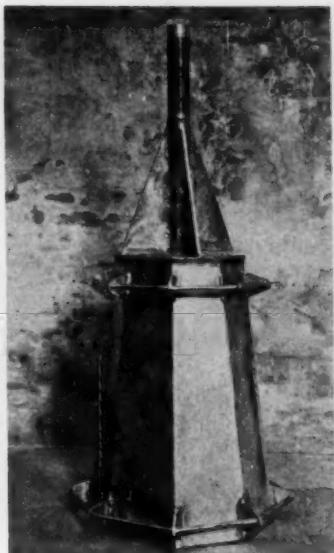
The base of the cross was fabricated to fit the existing steeple's base—with provisions for inserting the cross section into the base—where it was fastened to form

## Assemble These Parts to Make a Cross

**THE CROSS** is fabricated from red brass pipe and covered with commercial bronze sheet. Base with triangular supporting gussets fits steeple's projection. Octagonal cap reinforced with naval brass is placed on base.



ONE SECTION of the completed steeple ornament is the main cross



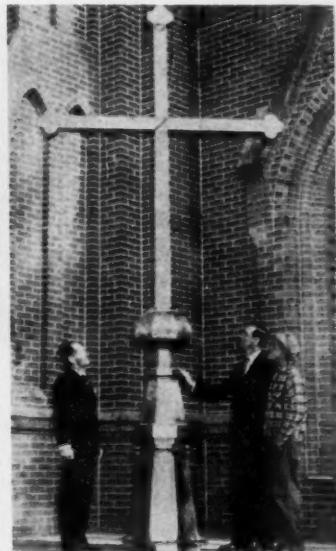
BASE FRAME and cap provide a socket for the cross section



OCTAGONAL ornamental base cover provides weatherproofing for the connection between base frame and cross section



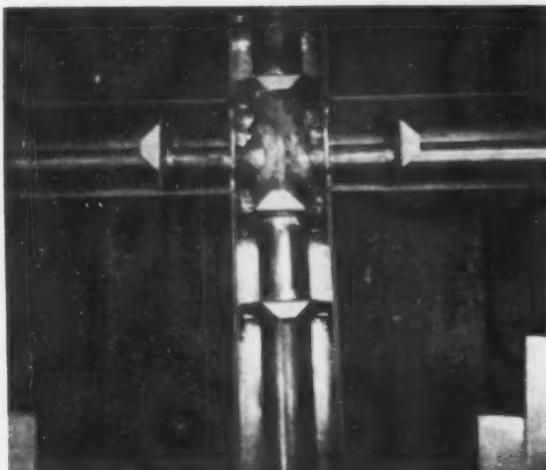
WERNER BLATTMANN supervises the joining of the components at the job site



COMPLETED CROSS assembled and ready for erection is inspected by sheet metal contractor and members of the parish

continued . . .

## Slender Cross Has Hidden Reinforcement



CROSS JOINT DETAIL shows how smaller pipe for cross arms was inserted through the larger upright pipe and brazed to provide the necessary strength

one complete steeple ornament.

The joint was made by slipping the 2  $\frac{3}{8}$  in. OD pipe into an extra heavy 85 percent red copper pipe, having an inside diameter slightly larger than the 2  $\frac{3}{8}$  in. outside diameter of the main cross structural frame.

### Gussets Welded to Brass Pipe

The extra heavy brass pipe became the stanchion of the base section. To this brass copper pipe were welded four triangular gussets made of  $\frac{3}{8}$  in. naval brass. Gussets were evenly spaced around the 360 deg of the extra heavy brass pipe. The pipe and its gussets were then welded to a 14 in. diameter circular base plate of  $\frac{3}{8}$  in. naval brass.

The completed stanchion was then fastened to a tapered octagonal reinforced cap that fits over the steeple terminal. The cap is 3 ft in length, with a 7 in. radius at the top and an 18 in. radius at the bottom.

It was fabricated from  $\frac{1}{8}$  in.

commercial bronze sheet. Additional support was provided for this cap by use of external reinforcing.

### Bracket Reinforced

The reinforcing was achieved by attaching near the top and bottom of the 3 ft cap, and at each of the eight seams, a  $\frac{3}{8}$  in. naval brass plate bracket which was drilled with a  $\frac{3}{4}$  in. diameter hole near its outer edge.

A brass rod of  $\frac{3}{4}$  in. diameter was then inserted through each of these holes and bent to match the contour of the base cap. After the brass rod had been inserted in the reinforcing brackets, the brackets were attached to the seams of the cap by welding. The rod was then welded in place in its bracket retainer.

Covering of the brass pipe frame consisted of 0.032 ornamental commercial bronze sheet. This material was held in place by frame plates placed to provide maximum structural support.

Three of these frame plates were used on each arm of the cross. Three were used on the upper stem and four on the lower stem.

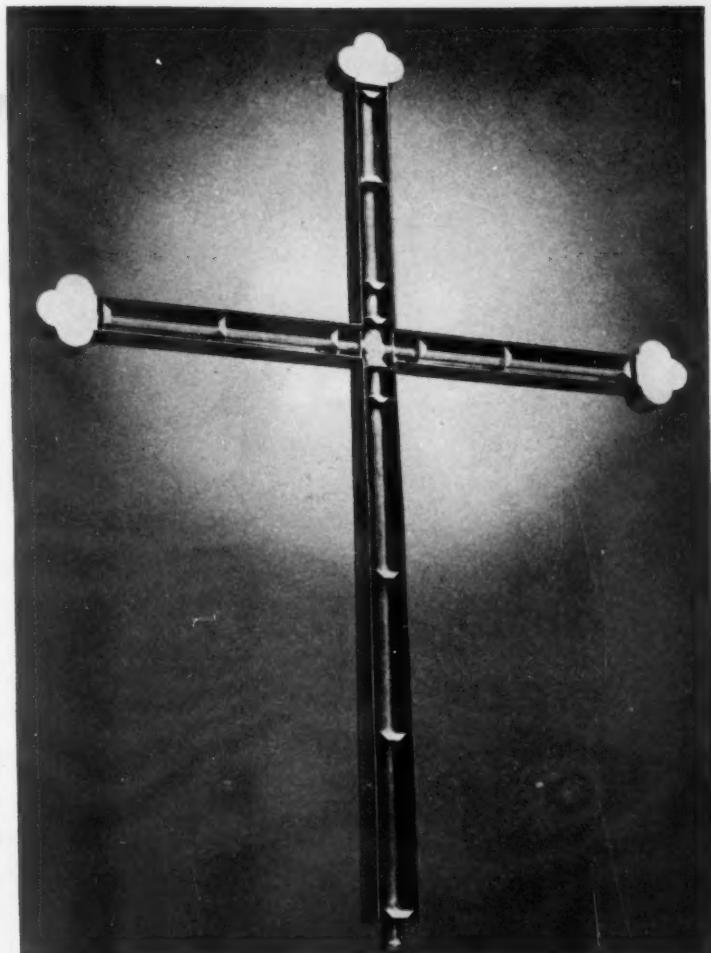
The frame plates were fabricated from  $\frac{1}{8}$  in. commercial bronze sheet. A 7  $\frac{1}{2}$  in. sq was cut and in its center was bored a 2  $\frac{3}{8}$  in. OD hole (for the horizontal arms this hole was bored for a 1  $\frac{1}{4}$  in. diameter). The corners of this square were then cut off.

### Frame Plates Hold Skin

The shear point was obtained by measuring 3 in. from the corner of the square in each direction. After the corners had been sheared, the lips were formed in the press brake by measuring out 2  $\frac{1}{4}$  in. from the center of the plate and forming a 90 deg bend on each of the four sides. When the frame plates had been placed in their proper locations, they were spot welded to the pipe, providing support needed for the arms.

Frame plates were located approximately 2 in. from the end of

**CONSTRUCTION DETAILS**  
of the cross show heavy  
bronze pipe for the frame  
with bronze frame plates  
and bronze skin



each arm and stem. Another was placed on each of the four pieces 2 in. from the welded joint. A third plate was located midway between these first two plates, on the arms and top stem. On the bottom stem, the space was divided into three equal sections and two plates located accordingly.

The cross covering was fabricated from 0.032 commercial bronze sheet. This was made into two pieces, one sheet being formed to cover three sides of the frame. After insertion over the frame plates, the bronze skin was brazed to each plate to achieve a secure joint between the skin and structural frame.

The fourth side of the covering

was a flat strip of bronze sheet laid over the open side of the three-sided piece previously installed. This strip was first tacked in place and then a complete brazed seam run the entire length of the covering for each leg of the cross.

The top and two side ends of the cross were capped by a three-leaf clover ornament fabricated of 0.032 commercial bronze sheet (same as the skin material). This ornament was fabricated around a 1/2 in. copper rod attached to the bronze pipe frame and used to support the sides of the terminating cap.

The point where the cross was attached to the base plate frame

was covered by a decorative ornamental shield. This shield (3 ft 6 in.) was fabricated from 0.032 commercial brass sheet and was designed to make the joint between the cross and the brass plate weathertight.

#### **Ornamental Shield Covering**

The ornamental cap for this joint was fabricated on the same principle as the octagonal base plate.

Components of the cross were carried to the job separately, assembled on the ground and raised in position by a derrick, where the cross was securely fastened to the existing steeple terminal.



**COMPANY INTEREST** in the apprentice training program has provided a wide range of experience and has developed a high degree of skill among employees in the fabrication of such products as this custom made stainless steel sink

"MUCH OF THE responsibility for the overall performance of heating and air conditioning systems rests with the company that fabricates and installs the ductwork and air distribution equipment. In many cases, it's to the advantage of the company to contract for all of the mechanical work involved on jobs such as hospitals, schools, motels, hotels, banks, shopping centers, and various other construction work in these and related categories," says Randall E. Smith, who heads up the sheet metal division of the Haskell Corporation, with offices and shops in Everett, Bellingham, and Mt. Vernon, Washington.

The Haskell Corporation got its start in 1883 by Edwin M. Haskell and is now managed by sons and grandsons of the founder. Frank

M. Haskell, Sr., son of the founder, is president, F. Murray Haskell vice president, Mrs. Frank M. Haskell, secretary, and Edwin L. Haskell, treasurer. The company specializes in sheet metal, heating, ventilation, and plumbing.

#### **What Made Firm Grow?**

Much of the growth of the sheet metal division is credited by Mr. Smith as due to the apprentice training program conducted by the company. The program is registered with the state and United States apprentice training groups and has been responsible for some of the key personnel in the operation of the company.

Mr. Smith points out that the scope of experience in the fields covered by the Haskell Corpora-

# **Why an Ap Sparked**

Diversified apprentice training has made employees responsive to demands of special jobs that have speeded this sheet metal contractor's growth

tion is so broad that it offers an apprentice experience in fields not often offered by other shops serving the area.

This training program has often been responsible for the development by mechanics of special tools to help with fabrication and installation of equipment. Once again, Mr. Smith credits the training program as being responsible for a keen spirit that encourages employees to express themselves in mechanical ability.

This expression of mechanical ability is responsible for much of the work done by the company. As Mr. Smith points out, "Team-work assures us a lasting friendship with our customers."

Some of the work that has come their way includes fabrication of metal fireplaces, corrugated alu-

# prentice Training Program

## Contractor's Growth



GALVANIZED LETTERS made in the company's sheet metal shop by journeymen trained in its broad employee training program are used to form the company's name on its Everett office and shop

uminum aircraft shipping cases, and even water shoes for walking on water. It's the reputation for being able to build these specialized items — serving the specific needs of its customers with finished products in all metals — that has helped the company grow.

Customers include the Army Air Force and U. S. Navy, with

jobs from California to the Arctic Circle; Seattle First National Bank; Shell, Texaco, and General Petroleum Oil Refineries; four county court houses and three city halls; over 100 schools, including elementary, junior, and senior high schools; Puget Sound Pulp and Timber Company; Scott Paper Company; Simpson Lee Pa-

per Company; Ketchikan Pulp Company; Alaska Lumber & Pulp Company, Weyerhaeuser Pulp Division; Pacific Coast Paper Mill; and over 10,000 residential units located in the Pacific Northwest and Alaska.

A recent addition to the Haskell Corp. is a complete stainless steel kitchen and cabinet department.



# Metal Spires Favored for Low Maintenance Cost

... because metal's durable surface

requires little upkeep

compared to spires using other materials

Typical of the spires used on modern buildings is one of stainless steel recently completed by the Limbach Co., Pittsburgh, for the new First Presbyterian Church, Youngstown, O. Four steel bars make up the skeleton of the spire. These were lifted to the roof of the church by a mobile crane, where they were assembled and placed in position.

The tower, or base portion, is constructed of aluminum, protected with a baked-on white enamel. The spire rises 50 ft above the tower and is completely sheathed with 14 ga type 302 stainless steel with a No. 2D finish. Measured from ground level, the spire rises 148 ft, and is topped by a crown symbolizing Christ the King.

The stainless steel sheet for the exterior skin of the spire was formed in the shop. Layout, forming and welding were performed to very close tolerances to enable finishing panels to fit perfectly in place during field erection. No allowance was made for trimming or altering panels in the field.

#### Usual Scaffolding Eliminated

Installation of the stainless steel panels began at the top of the spire. The sheet metal workers secured roof jacks and a platform just below the working area, lowering the jacks down the spire as sections were installed. This eliminated the conventional method of

scaffolding from base to peak.

Each stainless steel panel — resembling an elongated trapezoid — was fastened on its outside edges to the spines of the spire with a stainless steel gutter bar. A stainless steel batten cap was then fitted along the seams to hold the panels in permanent position. At the horizontal joints between the stainless steel panels, an 18 ga stainless steel clip was tack-welded to the upper panel to form a lock seam with the lower panel.

#### Base Bolted to Spire Frame

The panels use a 5/16 in. plywood base, which was bolted to the spire's steel frame. Between the plywood and the stainless steel skin is a layer of 30 lb asphalt-impregnated roofing felt.

Type 302 stainless steel sheet with a No. 2D finish is also used for the cupola of the church. Fourteen gage stainless steel, heli-arc welded, forms the upper four feet of the cupola.

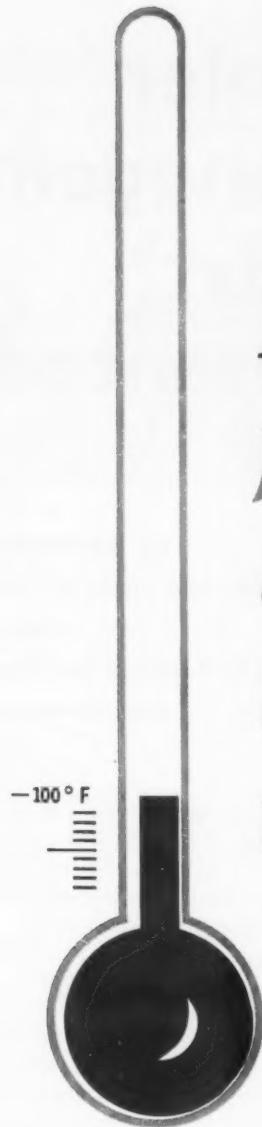
The stainless steel spire and cupola provide attractive focal points for the roof of the new church, and at the same time blend well with the limestone construction of the Georgian-American design.

The editors acknowledge the cooperation of the Committee of Stainless Steel Producers, American Iron and Steel Institute, for providing the photograph and information for this article.

STAINLESS STEEL spire and cupola provide long life, low maintenance costs for new churches as well as older ones

UP UNTIL a few years ago, the traditional church spire or steeple was still being constructed with wooden frames and sheathing. Often, slate or tile was nailed over the wooden sheathing to form the exterior surface.

Recently, the sharply rising cost of maintenance and repairs — painting exposed wood, replacing broken slate or tile — has prompted economy-minded church supervisors to look for more durable construction materials. Fast becoming a favorite for new spires, or for modernizing old ones, is metal. Light in weight by comparison with other materials, metal is available in a wide range of attractive finishes, is corrosion resistant, and offers lifelong durability.



# *Freon-13®* *for low low temperatures*

**Another premium Du Pont refrigerant  
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Ultralow-temperature refrigeration—this is the ever-increasing role being performed by Du Pont Freon-13\*. And now Du Pont has met industry's growing need for this refrigerant by making it commercially available from your refrigeration wholesaler.

Use of "Freon-13" with "Freon-12" or "Freon-22" in two-stage cascade systems has made practical the attainment of ultralow-temperature conditions of -100°F. and lower.

Cascade systems with "Freon-13"

are already operating successfully for such applications as metal treating, shrink-fitting of parts, oxygen manufacturing, environmental testing and low-temperature storage and preservation.

In common with all "Freon" refrigerants, "Freon-13" has excellent thermal and chemical stability—is nonflammable, virtually nontoxic and unsurpassed in purity and dryness. Ask your local, dependable refrigeration wholesaler for it.

For more information write: E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division, N2420, Wilmington 98, Delaware.

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premium quality  
refrigerants

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\*Freon and F- followed by numerals are Du Pont's registered trademarks for its fluorocarbon refrigerants.



FIRST COPY of new management guide manual is presented by NWAHACA president Harry Gurney (left) to dealer-contractor Glen Rynbrand

# Dealer Management Aids Presented

... by NWAHACA after  
more than two years of field study  
ranging from  
personal interviews to detailed questionnaires  
and correspondence

NEW HELP for dealer-contractors was introduced in the form of a 135-page manual at the 47th annual convention of the National Warm Air Heating and Air Conditioning Association. Known as the Business Management Reference Guide for Dealer-Contractors, the manual is divided into eight sections:

- A — Functions of the Business — Duties of Management
- B — Transactions of the Business
- C — Business Records — Accounting
- D — Estimating and Pricing for Profit
- E — Operating Methods and Controls
- F — Producing Sales and Income (Market Management)
- G — The Forces That Make Sales
- H — Sales Management

#### Manual Sent to Members

This manual is being sent — at no cost — to all members of NWAHACA as they pay their 1961 membership dues. Non-members will be permitted to purchase copies in the near future. The cost to non-members has not yet been decided.

The manual and its contents were presented by a panel of dealer-contractors moderated by Walter Leander, Bryant Mfg. Co. Panel members were James W. Ridgway, Frankfort, Ind.; Russell Orchard, Lima, O.; John L. McManus, Pittsburgh, and Clifton Newell, Buffalo.

Each of the eight sections contains information obtained from research based on personal interviews with successful dealer-contractors operating businesses from Minneapolis to eastern Pennsylvania, and from Michigan to Nashville.

#### Fact-Finding Questionnaires

In addition to these personal interviews, correspondence with many other dealer-contractors was used to obtain information, opinions and business experiences that range from annual sales volumes of \$100,000 to over \$1 million. Personal interviews lasted from four to six hours and covered each of the eight subjects.

The Reference Guide's objective is to make it both practical and possible for dealer-contractors to operate a more profitable business through a better understanding of sound management methods.

#### Guide Can Be Kept Current

A loose-leaf folder is used for the Reference Guide to permit the addition of more data as it becomes available. It will also permit easy replacement of segments as changes in business practices occur within the industry.

Other subjects covered during the three-day convention included: Obtaining a Local Code; Local Association Programs; Technical and Application



PANEL OF dealer-contractors explained background information used to develop the management reference guide. From left are John L. McManus, Clifton Newell, Russell Orchard, James W. Ridgway and Walter Leander

Data; Practical Applications of Research Data; Bigger and Better Industry Markets for Manufacturer, the Wholesaler, the Dealer-Contractor and the Utilities; The Silver Shield Program and how it is related to the manufacturer, wholesaler and utilities; and The Tools Available to sell Quality.

Officers serving during 1960 were reelected for another 1 year term. They are: president, Harry C. Gurney, Janitrol Heating and Air Conditioning Div., Midland-Ross Corp.; first vice president, Don Winegardner, The Majestic Co.; second vice president, Harold P. Mueller Jr., Mueller Climatrol Div., Worthington Corp.; managing director, secretary-treasurer, James M. Martin.

New Trustees elected for two year terms are: Roy C. Brainard, Standard Metal Fabricating Co.; Keith T. Davis, Bryant Mfg. Co.; Jess Moore, Coleman Co., Inc.; and Clyde H. Wilkinson, American-Standard Air Conditioning Div. Harold W. Mutz, The Peerless Corp., was reelected.

Continuing as members of the board are: Paul M. Augenstein, Chrysler Corp., Airtemp Div.; Ronald N. Campbell, C. A. Olsen Co.; Charles H. Franke, American Furnace Co.; Robert L. Leigh, Air Control



DEALER-CONTRACTORS receive details of how material was assembled and compiled from Fred Kammann (second from right) who handled the assignment for the association. Dealer-contractors are (l to r) Ben Flock, Lee Jones and Russ Frazier

Products, Inc.; Gordon Rieley, Lennox Industries, Inc.; Roland R. Taylor, Fraser & Johnson Co.; Kent L. Wilson, Minneapolis-Honeywell Regulator Co. Tom Byrd, The Lau Blower Co., continues as an ex-officio member.

## Silver Shield Dealers Hold Conference

REPRESENTATIVES of the 11 operating Indoor Comfort Bureaus and the 8 now in the process of forming met during the 47th annual convention to exchange information on procedures and techniques now being used. Groups held seminars on Budgeting, Sales Training, Business Management Training, Advertising and Sales Promotion, Indoor Comfort Bureau Organization, Membership Promotion, Meeting Planning, Standards and Technical Training. Seminar leaders reported to the assembly the overall plans now in use and

commented on the use of promising techniques now being tried in several bureaus. Recommendations were also made from the floor by delegates that could not attend all of the seminars.

Cost of operation of Indoor Comfort Bureaus was also reported upon with Lansing, Mich. reporting the lowest cost of \$1600. The highest was Kalamazoo, Mich. with \$9700.

Plans for selecting a date and place for a meeting next April were assigned to Glen W. Rynbrand, chairman, Silver Shield National Committee.

# Does Product Advertising Make Manufacturer Responsible for Equipment's Performance?

**Not unless the purchaser can show that  
the equipment advertising  
constituted a contract between the manufacturer  
and dealer-contractor  
for the benefit of the residence owner**

THE COURTS RECENTLY dismissed a case in which a customer tried to hold the manufacturer liable for defective air conditioning equipment.

The customer argued that the manufacturer's advertising established legal responsibility for the proper functioning of equipment sold. Advertising statements such as "... you are assured of (our) undivided responsibility for dependable operation" were cited in the case as evidence.

Why did the court dismiss the case? Briefly, because it was held that there was no contract made between the manufacturer of the air conditioning equipment and the dealer-contractor, who installed the equipment, for the benefit of the purchaser.

#### **When Customer Can Sue**

To win his case, the customer would have had to prove that the manufacturer's advertising constituted a contract with the dealer-contractor for the residence owner's benefit.

This feature of the law, that a customer or any third party for whose interest or benefit an agreement is made by two others, may sue for a failure of the perform-

ance of such a contract, has been for many years the subject of court decisions throughout the country.

These decisions by no means set the same or a universal rule but they do generally hold that the one for whose special benefit such a contract is made by others, has a right to demand its performance.

#### **Law's History Reviewed**

"The question of when and under what circumstances the beneficiary of a contract, not himself a party thereto, may recover thereon has been the subject of much and conflicting law. For long it was held that a stranger to a contract between others, in which one of the parties promises to do something for the benefit of the stranger, there being nothing but the promise, no consideration from such stranger and no duty or obligation to him on the part of the promisee, cannot recover upon it."

To this the court added a quotation, from an outstanding authority on the law of contracts, pertinent to basing a suit upon a manufacturer's advertising.

"The truth is that through this

travail of conflicting notions of justice and text writers the common law has given birth to a distinct new principle of law which takes its own place in the family of legal principles and gives not only to the donee beneficiary but also to a creditor beneficiary the right to enforce directly a promise from which he derives his interest."

#### **Rule's Limitations Explained**

There is however a limitation on this rule which was emphasized by a court in a southwestern state in dealing with a recent case. "Under the rule that a beneficiary may enforce a contract, the contract must have been intended for the benefit of a third person. It is not sufficient that the performance of the covenant may benefit a third person.

"It must have been entered into for his benefit or at least such benefit must be the direct result of performance and so within the contemplation of the parties. The fact that one not a party or privy to a contract is incidentally benefitted under it is no reason for declaring that the contract was made and intended for his benefit."

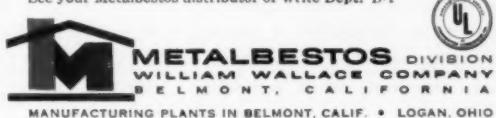


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By the Gas Vent Calculator he uses!*

This handy new pocket computer is the only device of its kind to give correct answers in seconds to the most complicated vent design questions. Who's it for? Why the man who installs Metalbestos, of course! It allows him to make his "take-offs" on the spot, give fast accurate bid estimates, save precious minutes on the job. Just one more scientific selling tool from Metalbestos — it's yours without charge.

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See your Metalbestos distributor or write Dept. B-1



# WHAT ASSOCIATIONS ARE DOING

## How Does Distributor Serve Sheet Metal Industry?

**Speakers analyze functions,  
discuss expanded activities of today's  
successful distributor**

WHY THE DISTRIBUTOR is of vital importance to the sheet metal industry — what he does for the user of his products and for the manufacturer of the goods he carries — was explained by Archer W. P. Trench, American Metal Market, in his address to delegates attending the 50th anniversary convention of the National Association of Sheet Metal Distributors. "The distributor has a complex job," Mr. Trench said. "He has unusual inventory problems, and a difficult sales and service function. Basically, he has three major responsibilities:

### **Responsibility to Customer**

"The first responsibility of any of us who offer goods and services is to our customer. The distributor must provide an adequate supply of the right goods, of the right quality, at a fair price. He must also render all services reasonably expected of him, such as delivery, credit, etc. But, furthermore, he must be concerned with his customer's success. This is an educational job. He must help his customer, encourage him to use methods, displays, services, etc., that are modern, progressive and profitable.

### **Responsibility to Supplier**

"The manufacturer or producer regards the distributor in several ways: as a warehouse, a means of distribution, as a sales organization, and even as a merchan-

diser of his goods. The distributor is close to the market, is in a position to collect end-use statistics, to know customer needs and to report on competition to the manufacturer.

### **Responsibility to Himself**

"Primarily, the distributor has a responsibility to himself, his employees and to the future owners of the business. After all, we who run businesses should consider ourselves as trustee managers, who, in addition to our daily management chores, must build a stronger, healthier, more profitable enterprise to turn over to our successors. In addition to our own salaries, we should earn a reasonable return, both on our sales and on our investment."

### **Must Improve Cooperation**

A. B. Lewis, president, The Palmer Donavin Mfg. Co., Columbus, traced the history of the distributors' association since its founding 50 years ago, noting that the question of the day in 1910 was, "How can we improve cooperation between manufacturer, wholesaler and retailer?" Today, he said, this is still an important question. He listed three

"musts" for today's distributor:

- 1) To supply what is needed, where it is needed and when it is needed.
- 2) To provide training programs for employees.
- 3) To provide efficient warehousing.

### **Develop Creativity**

B. B. Goldner, School of Creative Thinking, La Salle College, Philadelphia, explained how creative thinking by executives can lead to increased sales and better profits. He urged management to "encourage creativity and cash in on it."

### **High Cost of Dishonesty**

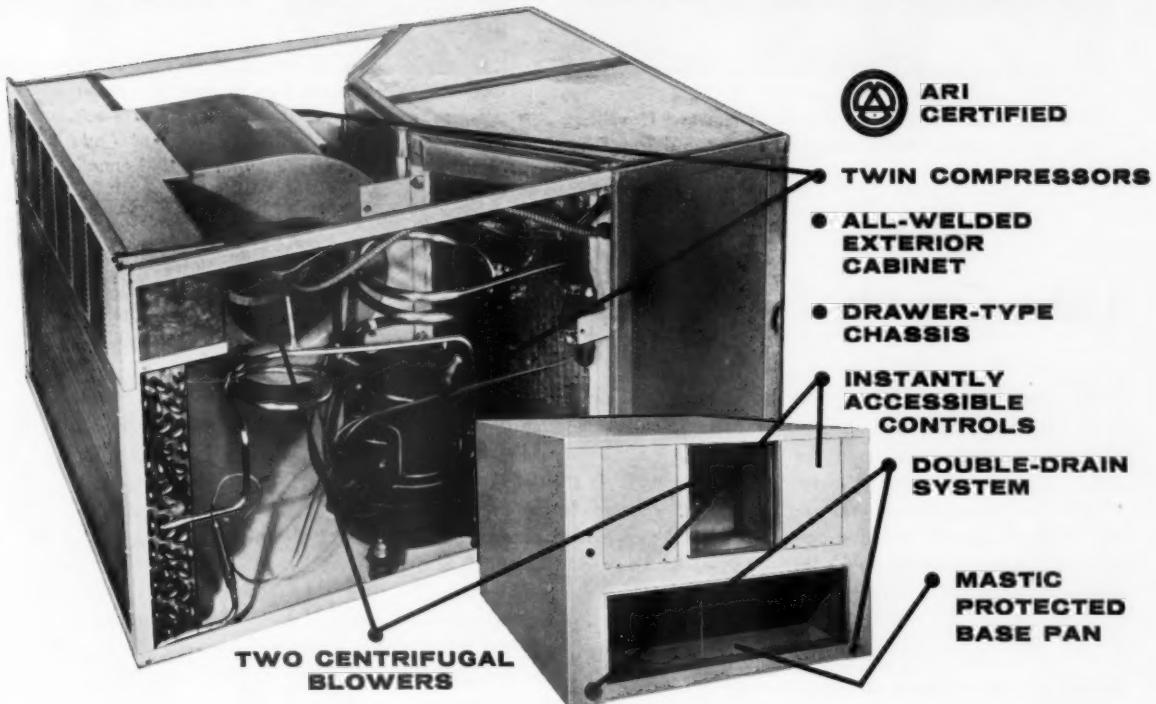
How employee dishonesty eats up a firm's profits was discussed by Norman Jaspan, president, Norman Jaspan Associates, Inc. According to Mr. Jaspan, internal dishonesty is costing American businessmen more than a billion dollars a year in cash and merchandise alone. In pointing out that the overwhelming majority of dishonest depredations are committed by individuals with no criminal records, "whose business and personal backgrounds are be-

(Continued on page 58)

*Here's Built-In Quality  
That Stops Profit-Killing Call-Backs!*

# NEW **Coolerator 4 H.P.**

## SELF-CONTAINED AIR CONDITIONER



**TWIN COMPRESSORS**

- ALL-WELDED EXTERIOR CABINET

- DRAWER-TYPE CHASSIS

**INSTANTLY ACCESSIBLE CONTROLS**

**DOUBLE-DRAIN SYSTEM**

**MASTIC PROTECTED BASE PAN**

**Exclusive 4-Point Program Provides  
Bonus Profits on Every Sale!**

1. **QUALITY PRODUCTS!** Every unit rigorously performance-tested.
2. **EXCLUSIVE FEATURES THAT SELL!** Lectrofilter®, the amazing low-cost electrostatic filter, Permalife finish, and others!
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4. **PROTECTED TERRITORIES!** There's no "next-door" franchising by Coolerator!

\*Optional Accessory

You keep more of the profits you make with Coolerator. They aren't eaten away by excessive service and "adjustments." Proof? Actual service records show Coolerator equipment ranks at the top of the industry for dependable performance. In self-contained units, remotes or heat pumps, you can't sell more service-free comfort than Coolerator. So add to your profits two ways: with (1) Coolerator quality and (2) Coolerator's exclusive Bonus Profit Plan. Mail the coupon below today!

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**McGRAW-EDISON COMPANY**

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**ALBION DIVISION, DEPT. DC-12**  
McGraw-Edison Company, Albion, Michigan

Please send complete information on Coolerator Central Air Conditioners and the Bonus Profit Plan.

Name \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

## WITH THE ASSOCIATIONS

(Continued from page 52)



MEMBERS OF THE JOINT APPRENTICESHIP committee serving northern Indiana are (l to r) Howard Houchens, Alex Einikis, Arthur Borgmeier, Lee Turner and Tom Daily



OLD TIMERS recalling their experiences as apprentices are (from left, standing) Ben Flock, Merle Daily, John Wesbecher Sr. and Andy Mushinsky. Seated are John and Kenneth Olson

## Lake County Honors Graduating Apprentices

HAMMOND, IND. — About 360 people gathered to honor apprentices who recently completed the Lake County (Indiana) Sheet Metal Joint Apprenticeship Training Program. Guests included employers, union members, wholesalers, manufacturers' representatives and wives.

### Speakers from Many Groups

Commemorative addresses were given by Ben Flock, president, Sheet Metal and Warm Air Heating Contractors Association of Indiana; Ray Heninger, state supervisor, Bureau of Apprenticeship and Training; Howard Houchens, chairman, Sheet Metal Joint Apprenticeship Committee; and J. W. Butcher, Inland Steel Products.

### Training Program Intensive

Acting as the toastmaster was Jerry Clusserath, president, Northern Indiana Sheet Metal and Warm Air Heating Contractors' Association, who said, "These new journeymen are true artisans. They've completed a very intensive training program that in-

cludes 200 hours each year spent in night classes and at the same time they have put in a full 40 hours a week on the job."

Night school classes are held two nights each week, except during June, July and August, for four years. Classes are three hours in duration, and apprentices receive no pay for attending school. Periodic examinations are conducted, and acceptable progress must be shown to advance in the training program.

Upon completion of the four years of schooling and on-the-job training, an apprentice must pass a final examination testing his ability as a skilled craftsman.

### Recognize Old Timers

The commemorative ceremonies included recognition of men who had spent 25 years or more in the sheet metal industry. This recognition was extended to both contractors and sheet metal workers. "The old timers of this industry," J. W. Butcher said in his address, "are responsible for the prestige enjoyed by the sheet metal trade, which fabricates and installs its

products in buildings being erected to provide people with comfort during both their working hours and their leisure time. It is the skill the old timers have developed through experience that makes it possible for our industry to perform its tasks economically. These men and others like them well deserve the honor you are bestowing upon them tonight."

## Columbus Group Publicizes Objectives

COLUMBUS — Mailing pieces describing the advantages of dealing with members of the Heating, Air Conditioning and Sheet Metal Association of Columbus, Ohio are now available to members from association headquarters.

The association reports that it is currently celebrating its 55th birthday. News releases calling attention to this milestone and describing some of the aims and objectives of the association are

(Continued on page 58)

NOW

...SPECTACULAR NEW  
GAS-FIRED BASEMENT MODELS  
IN THE

*Armstrong*  
700 series



The Armstrong 700 Series —  
fabulous new furnaces for the finest  
in gas heating — now includes  
basement, up-flow and counterflow models  
in sizes to 160,000 BTU

**NEW**

*Armstrong  
700-series*

## Gas-Fired Basement Models

offer all of the features which made the 700 Series up-flow and counterflow models 1960's most exciting news in home comfort engineering

### ★ NEW HIGH STYLING

Low, smart styling in green, gold and white blends well into any decorating scheme, is perfectly at home in any part of the basement.

### ★ NEW COMPACT DESIGN

More space for living. Greater freedom in furnace location. Lower installation costs. That's the payoff on the unusually compact design of the Armstrong 700 Series basement models. These new units stand only countertop high (38 $\frac{3}{4}$ "), yet they require no more floor space than most full-height basement models. The 80, 100, and 120,000 BTU sizes are only 20" wide and 45 $\frac{1}{2}$ " deep; 140 and 160,000 BTU sizes measure just 26" by 52".

Smaller flue connections . . . a full inch smaller than on most basement models of comparable capacity . . . mean further savings on installation thru substantial reduction of chimney costs.

### ★ NEW HIGH STANDARDS OF PERFORMANCE

Performance was not sacrificed to achieve compact design or fine styling in the 700 Series. Armstrong engineers have set new standards in styling and size with furnaces which are unexcelled for efficient, economical, maintenance-free operation.

### ★ SAME FINE QUALITY

In materials, components and craftsmanship, Armstrong 700 Series furnaces maintain or exceed the exacting standards which have made "Armstrong" the by-word of quality in warm air heating.

### ★ FABULOUS NEW PRICES, TOO

In design, performance and quality of construction Armstrong 700 Series gas-fired basement models offer a combination of advantages not available in any other furnace at any price — yet they are priced to compete against units which have far less to offer.



Now available in 140 and 160,000 BTU sizes — the fabulously successful Armstrong 700 Series Gas Fired Up-Flow and Counterflow Furnaces

The tremendously enthusiastic acceptance of these new furnaces . . . by home owners, home builders and heating contractors . . . proved beyond all doubt that, with the 700 Series, Armstrong engineers achieved what the whole industry has been striving for. Now the 700 Series has been expanded to include additional up-flow and counterflow models. Both are now available in six sizes, 60,000 to 160,000 BTU . . . a total of 12 up-flow models and 8 counterflow models.

For prices and details on all Armstrong 700 Series gas fired furnaces — up-flow, counterflow and the new basement models — write to the Armstrong Furnace Company, 851 West Third Avenue, Columbus 12, Ohio.

**ARMSTRONG**  
FURNACE COMPANY  
  
COLUMBUS OHIO  
DIVISION OF NATIONAL UNION ELECTRIC CORPORATION

# Our Wholesalers Pin Medals On Us



Why? Because *their* CONTRACTOR-CUSTOMERS are always pleased with Standard Registers and Grilles. Contractors like the engineering, quality, design, delivery and satisfaction they receive with Standard Registers and Grilles. No wonder that Standard is known as the "no-problem" line for WHOLESALERS to handle—and for CONTRACTORS to install.

**Wholesalers and Contractors  
You Can Profit  
With the STANDARD Line of  
Registers and Grilles**

**Mail This Coupon Today For Additional Details**

**STANDARD STAMPING & PERFORATING CO.**

3137 W. 49th Place, Chicago 32, Ill.

Gentlemen:

- I am a WHOLESALER. Please send me information on representing the Standard Line.
- I am a CONTRACTOR. Please send additional details and the name of my nearest Standard Wholesaler.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

## WITH THE ASSOCIATIONS

(Continued from page 54)

### Builder Gets Silver Shield Certificate

KALAMAZOO, MICH. — David Satin, Kalamazoo builder and real estate operator, recently was presented with a Silver Shield certificate certifying that the first of 600 homes in his Arcadia housing development is equipped with a Silver Shield warm air heating system. All 600 of the homes are scheduled to have Silver Shield systems installed by the Glen W. Rynbrand Heating Co.

The presentation was made in a formal ceremony attended by the building page editor of the Kalamazoo Gazette, representatives of the National Warm Air Heating and Air Conditioning Association, and officers and members of the Kalamazoo Indoor Comfort Bureau.

In accepting the certificate, Mr. Satin said: "Purchasing shelter — which means simply a roof, walls, flooring and a few of the bare essentials — is a thing of the past. Buyers want more today. They want, among other things, a good heating system that provides even temperatures in all parts of the house at all times, from floor to ceiling. All of the homes I build are going to have this feature built into them."

### Columbus Launches Publicity Program

(Continued from page 54) being prepared for local newspapers, chamber of commerce publications, and Better Business Bureau bulletins. According to Robert E. Holmes, executive secretary, the board of directors believes that increased emphasis should be placed on informing the public about the association.

### Minneapolis Groups Study Fee Ordinance

MINNEAPOLIS — The Air Conditioning & Heating-Roofing & Sheet Metal Association of Minneapolis, Inc. reports that the Metropolitan Building Officials Association has drafted a proposed ordinance which the building group hopes can be placed in effect to replace the present fee ordinances which many communities have adopted from the city of Minneapolis.

The MBOA hopes to pass a uniform fee schedule which would assess permit fees on the cost of jobs, with the fee for most jobs being one percent of the job cost, or \$14.50, whichever is greater. The one percent schedule would hold until a cost of \$30,000 was attained, and from this point upwards the fee would be based on  $\frac{1}{2}$  of one percent of the cost of the job.

### Officers Move Up In Pennsylvania Association

AMBRIDGE, PA. — Carl Ammon, former first vice president of the Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, has moved to Las Vegas, Nevada. Succeeding him as first vice president is Jack Trost, formerly second vice president. R. E. Winger was moved from third vice president to second vice president. Jack Simmons was appointed by Bernard Lawrence, president of the association, to serve as third vice president.

The Pennsylvania group will hold its 13th annual convention in Philadelphia, April 28-29. Jack Simmons is convention chairman, Frank Sherwood co-chairman.

### Manufacturer Is Host To Shreveport Group

SHREVEPORT, LA. — Bar-Brook Mfg. Co. recently served as host at a dinner meeting for representatives of the air conditioning and heating industry, including members of the Shreveport Association of Residential Air Conditioning & Heating Contractors, Inc. Taylor Barnes, Bar-Brook president, complimented the dealer-contractors for their participation in the Silver Shield training school, which was conducted under the direction of Clyde Juneau, city air conditioning inspector. Principal speaker of the evening was Mayor Clyde Fant.

### Tell How Distributors Serve Industry

(Continued from page 52) yond reproach," Mr. Jaspan said that top executives must share part of the blame, for it is within their power to remove this problem by exercising preventive management.

### Officers Elected

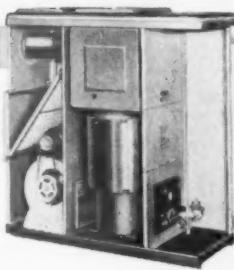
Robert W. Mason, Marathon Equipment & Supply, Ltd., Toronto, was elected president. Noel E. Girard, Girard Steel Supply Co., St. Paul, and Orin J. Lockwood Jr., Binghamton Hardware Co., Binghamton, N. Y. were elected vice presidents. Conner Clapp, Conner Mfg. Co., Louisville, Ky. and Norman Herr, Bayonne Steel Products Co., Newark, N. J. were elected to serve three year terms on the executive committee. A. M. Roberson, C. M. McClung & Co., Knoxville, Tenn. was elected to serve Mr. Lockwood's unexpired term on the executive committee.

(More association news on page 62)

# SUPERIORITY PRICED IN LINE WITH CHEAPLY CONSTRUCTED UNITS



**GAS FIRED**  
Assembled and  
Wired Winter  
Air Conditioners . . .  
Upflow,  
Counterflow  
and Horizontal  
... Heavy  
Gauge Heat  
Exchanger  
and Cabinet.



**GAS OR OIL FIRED**  
Basement Type Winter Air  
Conditioners . . . Burn either Gas  
or Oil with Equal Efficiency . . .  
Heavy Gauge Heat Exchanger.



**OIL FIRED**  
Assembled and Wired Winter  
Air Conditioners . . . Upflow,  
Basement and Counterflow . . .  
Heavy Gauge Round Heat Exchanger  
with Refractory Firebox.

Why pay a premium when you can have superiority at reasonable cost?

When you install a Moncrief Furnace or Air Conditioner, you can be sure of two things:

1. You are supplying your customer a reliable, substantially constructed unit backed by 65 years of manufacturing experience.
2. You are providing this dependability without having to pay a premium or charge a premium for it.

Think of this when you are looking for a lower price

than for Moncrief. And remember that Moncrief prices are in line with many, many cheaply constructed units.

Moncrief makes you competitive and keeps you competitive by concentrating on advanced manufacturing methods that reduce manufacturing costs — not by reducing the desirable qualities of Moncrief Furnaces.

Moncrief makes it easy and convenient for you to buy at competitive prices without stretching your capital to carry a large inventory.

Call your Moncrief Wholesaler, now!

# MONCRIEF

THE HENRY FURNACE

HEATING AND AIR CONDITIONING UNITS

MONCRIEF  
SINCE 1895

COMPANY • MEDINA, OHIO

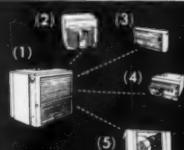
FURNACE PIPE AND FITTINGS



Horizontal  
Furnaces  
4 Oil Sizes.  
4 Gas Sizes



Year 'Round  
Combination  
A.C. Units  
Air or Water  
Cooled, Gas  
or Oil Fired



(1) 2, 3, 4, 5 H.P.  
Air Cooled Condens-  
ensing Units, (2)  
Plenum Evaporator,  
(3) Duct Evaporator,  
(4) Counterflow  
Evaporator, (5) Blower-  
Evaporator Unit.

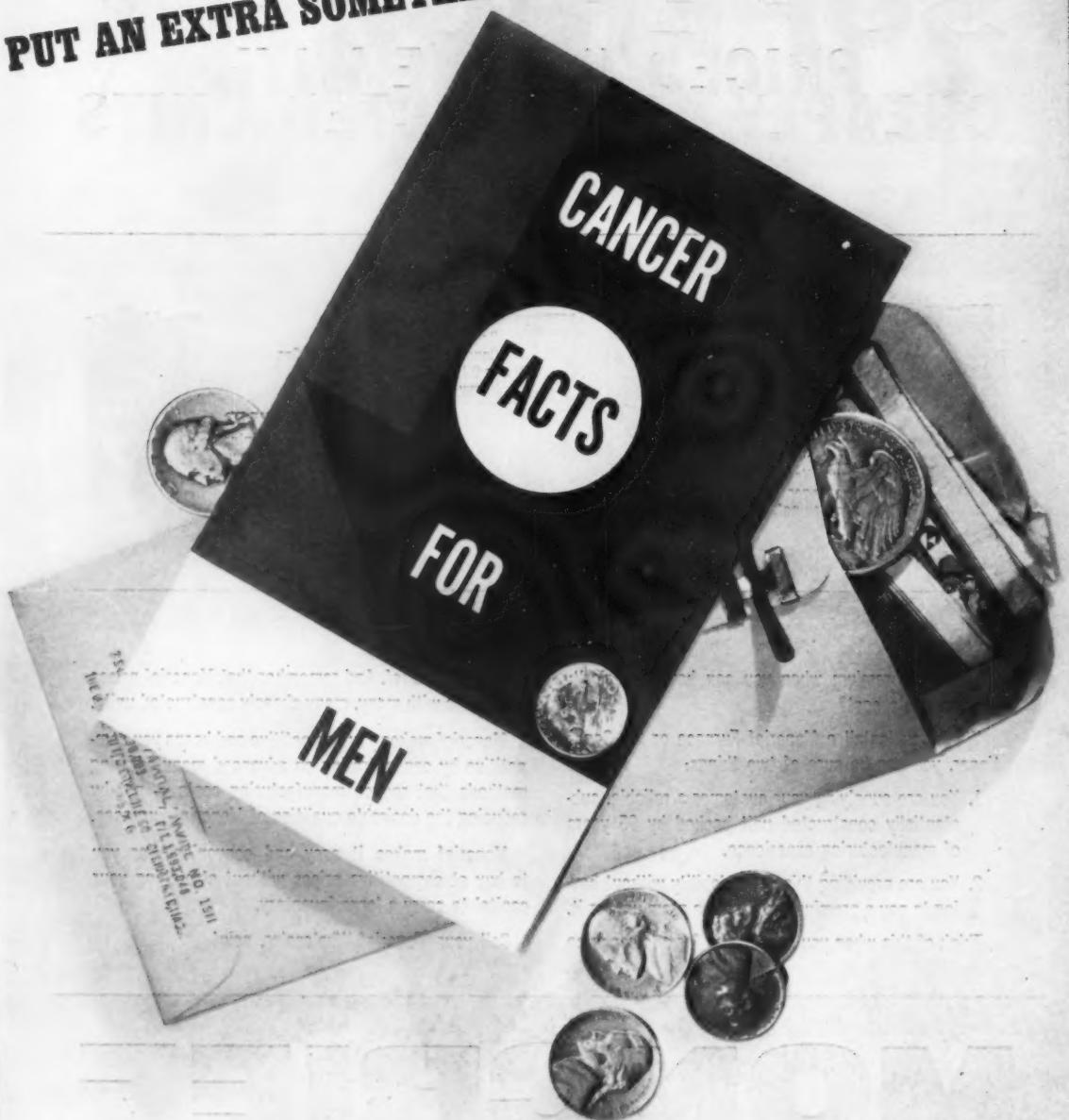


Gas  
Conversion  
Burners



Gas Fired  
Unit Heaters  
5 Models

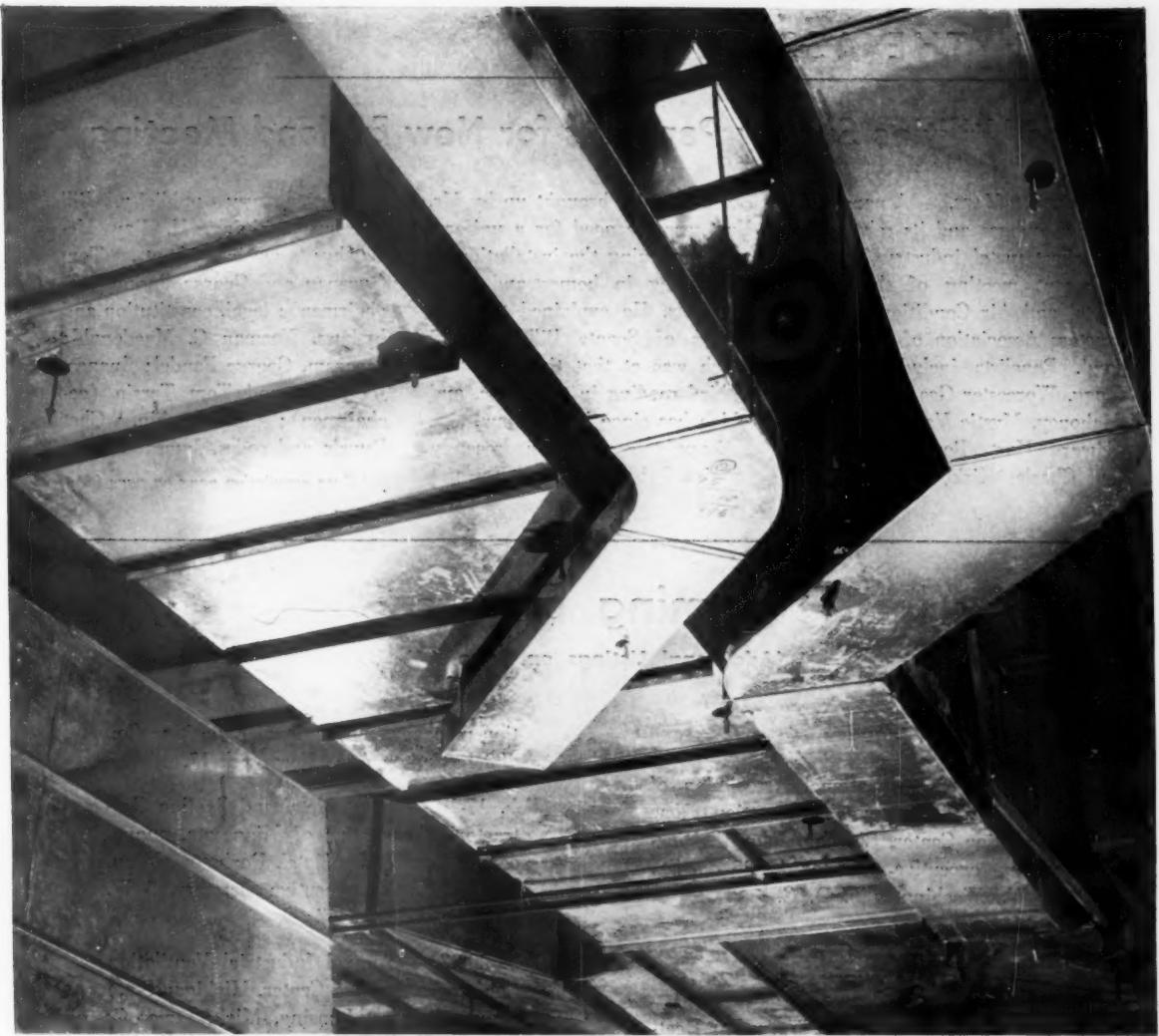
**PUT AN EXTRA SOMETHING IN THEIR PAY ENVELOPES**



It could be the biggest bonus you ever gave your employees—life-saving facts about cancer. Whether you have a factory or an office—a hundred or a thousand employees—we are prepared to offer a cancer education program to meet your particular requirements. Pamphlets, posters, films and speakers will bring vital information to your employees. Such programs pay off in saving lives. Call your local American Cancer Society for further information. Do it today.

**American Cancer Society**





## *Bethcon galvanized steel sheets permit long spans, minimum supports*

Strong and rigid—because they're steel—Bethcon galvanized sheets form up into strong and rigid duct-work which requires a minimum number of supporting brackets.

In addition, a Bethcon galvanized steel sheet is just right for easy shopwork . . . not too hard, not too soft. That's because we use a special annealing cycle which

gives the sheet an ideal balance of ductility and strength.

Bethcon's zinc coating is second to none for its refusal to flake or peel off. Bethlehem's continuous galvanizing process bonds zinc to steel so tightly that even when the sheet is doubled back on itself, the coating stays put. Hemming without puckering or wrinkling is

no problem with Bethcon sheets.

You can specify Bethcon galvanized sheets in a wide variety of gages, with either plain open-hearth or copper-bearing (Beth-Cu-Loy) steel for the base metal. We'll be glad to furnish any details you need. Just get in touch with our nearest sales office.



for Strength  
Economy  
. . . Versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Sales: Bethlehem Steel Export Corporation

# BETHLEHEM STEEL



# WITH THE ASSOCIATIONS

(Continued from page 58)

## Gas Utilities Supply Panelists for New England Meeting

LEXINGTON, MASS. — A panel discussion on gas and its relation to the sheet metal industry featured a recent meeting of the Sheet Metal and Air Conditioning Contractors Association of New England. Panelists included Melvin Rugg, Worcester Gas Co.; Joseph Mahoney, Mystic Valley Gas Co.; Edward Hart, Boston Gas Co.; and Charles Kirkiles, Lowell Gas

Co. One point brought up by Mr. Hart was the need for a uniform code governing the installation of gas piping in homes and other buildings. He explained the provisions of Senate Bill No. 707 which was at that time awaiting a third reading in the house, and which has since become law.

Committee chairmen recently appointed by the New England

association are: publicity, Bill Dreelan; training, H. Ray McCarthy; special events, Tom Queenan and George Parker (co-chairmen); legal, constitution and by-laws, Norman C. Macdonald; program, George Fandel; finance, Joe King and Tom Terrio (co-chairmen); membership, Chet Duval; and codes, James Coco.

(More association news on page 64)

## Coming Events

(Additional Listings on Page 64)

### January

Jan. 29-Feb. 2 — National Association of Home Builders, annual convention, New Exposition Center, Chicago. John M. Dickerman, executive director, 1625 L St., N. W., Washington 6, D. C.

### February

Feb. 2-3 — Sheet Metal and Warm Air Heating Contractors' Association of Indiana, annual convention, Hotel Severin, Indianapolis, Ind. Ed. Lewis, executive secretary, 1414 E. Southport Rd., Indianapolis.

Feb. 5-8 — New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, annual convention, Hotel Syracuse, Syracuse, N.Y. Clarence J. Meyer, 569 Genesee St., Buffalo.

Feb. 13-16 — American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., semi-annual meeting, Conrad Hilton Hotel, Chicago. R. C. Cross, executive secretary, 234 Fifth Ave., New York.

Feb. 13-16 — International Heating & Air-Conditioning Exposition, International Amphitheatre, Chicago. E. K. Stevens, exposi-

tion manager, International Exposition Co., 480 Lexington Ave., New York 17.

Feb. 17-18 — Sheet Metal and Roofing Contractor's Association of Minnesota, annual convention, Kahler Hotel, Rochester, Minn. Dale O. Lynch, executive secretary, 5 W. Lake St., Minneapolis 8.

Feb. 20-23 — Annual Industrial Ventilation Conference, Kellogg Center, Michigan State University, East Lansing, Mich. James C. Barrett, Michigan Department of Health, Lansing 4, Mich.

### March

Mar. 6-8 — Sheet Metal Contractors' Association of Wisconsin, annual convention, Hotel Schroeder, Milwaukee. Robert S. Schmieder, executive secretary, 8320 W. Bluemond Rd., Milwaukee.

Mar. 6-8 — Ohio Sheet Metal Contractors' Association, annual convention, Netherlands-Hilton Hotel, Cincinnati, Ohio. Don Dieterle, executive secretary, 1603 S. Cove Blvd., Toledo 6.

Mar. 15-17 — Michigan Heating & Sheet Metal Association, annual convention, Hotel Henrose, Detroit. N. J. Biddle, secretary 3035 E. Grand Blvd., Detroit.

# WATERLOO

## Airline Grilles



### All Extruded Aluminum Units for Floors, Sills and Walls

Streamlined Waterloo *Airline Grilles* fit perfectly into modern architectural and engineering concepts. These extruded aluminum grilles, available up to 12 feet in length in one piece construction, are excellent for every type of floor, sill and wall application.

Designed to match a wide range of architectural finishes, Waterloo *Airline Grilles* feature a unique bar-support method that makes them practically tamper-proof. Since these units are designed with  $\frac{1}{4}$ " face bars on  $\frac{1}{2}$ " centers, they are heel and pencil proof.

**Write for comprehensive Selection Guide on these new multi-purpose Waterloo Grilles.**

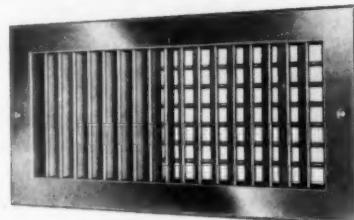


**WATERLOO REGISTER COMPANY, INC.**

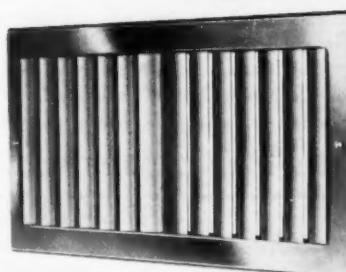
P.O. BOX 72, WATERLOO, IOWA

*Waterloo  
Offers a Complete Line*

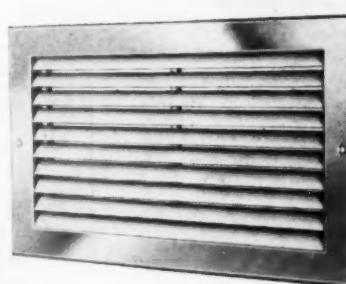
#### TYPICAL WATERLOO UNITS:



WATERLOO  
SUPPLY  
GRILLES  
★  
MODEL  
2V



WATERLOO  
CURVED  
LOUVER  
GRILLES  
★  
MODEL  
1CV2



WATERLOO  
RETURN AIR  
GRILLES  
AND  
REGISTERS  
★  
MODEL  
3HD

# WITH THE ASSOCIATIONS

(Continued from page 62)

## Coming Events

(Continued from page 62)

### March

Mar. 23-25 — Southeast Trade Exposition sponsored by Sheet Metal, Roofing, Heating, Air Conditioning Contractors' Association of Georgia. B. L. Noblitt, executive secretary, 208 Red Rock Bldg., Atlanta 3.

### April

Apr. 6-7 — Sheet Metal, Air Conditioning and Roofing Contractors Association of Illinois, annual convention. Pere Marquette Hotel, Peoria, Ill. M. P. Lauerman, secretary, 237 E. Tompkin St., Galesburg, Ill.

Apr. 10-12 — National Warm Air Heating & Air Conditioning Association of Canada, annual convention. Seaway Hotel, Toronto. T. A. Clark, general manager, 4195 Dundas St., W., Islington, Ont.

Apr. 13-15 — Gas Appliance Manufacturers' Association, annual convention. Boca Raton Club and Hotel, Boca Raton, Fla. Gas Appliance Manufacturers' Association, 60 E. 42nd St., New York 17.

Apr. 19-21 — National Association of Sheet Metal Distributors, spring convention. Sheraton-Cleveland Hotel, Cleveland. Thomas A. Fernley Jr., executive secretary, 1900 Arch St., Philadelphia 3.

Apr. 23-26 — Oil Heat Institute, annual convention. Statler-Hilton Hotel, Washington, D. C. Charles R. Burkhardt, managing director, 500 5th Ave., New York 36.

Apr. 24-26 — Sheet Metal and Air Conditioning Contractors' National Association, annual convention. Ambassador Hotel, Los Angeles. J. D. Wilder, executive secretary, 107 Center St., Elgin, Ill.

Apr. 28-29 — Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, annual convention. Benjamin Franklin Hotel, Philadelphia. Earl W. Liebermann, secretary, 1411 Merchant St., Ambridge, Pa.

### May

May 21-23 — Northamerican Heating & Air-conditioning Wholesalers, Inc., spring convention. Queen Elizabeth Hotel, Montreal. Wilbur R. Bull, managing director, 1200 W. Fifth Ave., Columbus 12, Ohio.

### June

June 29-July 1 — Carolinas Roofing & Sheet Metal Contractors Association, annual convention. Ocean Forest Hotel, Myrtle Beach, S.C. H. J. Stockard Jr., executive secretary, Raleigh, N.C.

### Lawrence Addresses SE Pa. Association

PHILADELPHIA — Bernard Lawrence, president of the Sheet Metal, Air Conditioning and Roofing Contractors' Association of Pennsylvania, was guest speaker at a recent meeting of the South Eastern Pennsylvania Heating and Air Conditioning Contractors' Association. Mr. Lawrence outlined the many advantages provided by membership in a state association. Other points he covered included

the necessity of making good sales presentations and dangers of price cutting.

### Correction

On page 84, October issue, it was reported that the National Building Code (Canada) was being revised and that a plenum clearance for furnaces would be 13 inches. This figure should have been 3 inches.

### Canadians Receive OHI 'Treasury' Pieces

NEW YORK CITY — The Oil Heat Institute of America and the Oil Heat Association of Canada have signed a three-year licensing agreement giving the OHA of Canada the right to produce and distribute OHI "Treasury of Advertising" material throughout Canada, exclusive of British Columbia. Initial distribution of "Treasury" pieces in Canada has been quite successful, according to OHI.

... need a good  
**DIRECT MAIL** piece?  
 ... use **AMERICAN ARTISAN's**  
**MODERNIZATION CHECK-LISTS**

**CHECK-LISTS spell out to the prospect:**

THERE IS NO REASON why every heating system cannot provide a "comfortable unawareness" that the equipment is operating. Often, the work required for a professional heating

man to improve or modernize existing systems is minor. Use of these check-lists will help him to determine how his system stacks up against the standards set for a "Good" system.

## 22 important check points for good heating performance; among these are:

- Is the furnace less than 15 years old?
- Are room air temperature differences within 2 degrees between all rooms (at comparable locations)?
- Are occupied areas free from noticeable drafts?
- Does system include a humidifier?
- Have service calls been rare during recent years?
- Are fuel costs equal to those for similar houses in the vicinity?
- Has furnace been checked for efficiency within past 12 months?

**SPACE FOR A SALES LETTER BY THE DEALER-CONTRACTOR IS PROVIDED ON  
REVERSE SIDE OF CHECK-LISTS**

To: The Editors  
 American Artisan  
 6 N. Michigan Ave.  
 Chicago 2, Ill.

Please rush the following quantities:

Heating check-lists  
 Summer air conditioning check-lists

Enclosed is my check for \$..... to cover reprinting costs.

(Please print)

Name .....

Company .....

Street Address .....

City and State .....

I am a dealer .... wholesaler .... manufacturer

.... other ....

**ORDER**  
**FROM**  
**EDITOR**  
**AMERICAN**  
**ARTISAN**

THE HEATING, air conditioning and sheet metal check-lists published in the March American Artisan Modernization Issue can be used as direct mail pieces, for presentation by salesmen, as giveaways items for home shows, etc. Designed to remind home owners of their modernization needs, the two-color check-lists are available at the following prices:

Quantity	Cost
50	\$ 0.85
100	1.35
200	2.70
300	4.05
400	5.40
500	6.75
1000	13.50
2000	27.00
3000	37.00
4000	48.00
5000	59.00

# EQUIPMENT DEVELOPMENTS

The latest information on manufacturers' developments is presented here with brief summaries of the applications of these products. For additional product information which is available see this month's New Literature department

## Return Air Humidifier

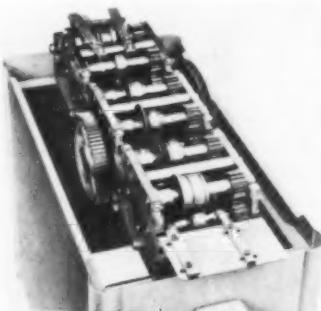
INSTALLED in return duct of heating system, the humidifier (Model 70) is wired in parallel with blower motor and in series with fan switch. Unit is centrifugal atomizing, has a daily capacity of four gallons of water. It will adequately



humidify any average small home without wetting any part of the heating system, according to manufacturer. Made of corrosion resistant stainless steel and aluminum, the humidifier is shipped with installation instructions and template—*Skuttle Mfg. Co., Milford, Mich.*

## Lock Forming Machine

"CLIPROL" will produce government cup clips at speeds of 70 to 80 fpm, according to manufacturer.

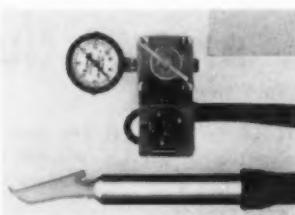


Machine can handle clips as short as 6 in., galvanized steel up to 22 ga. or aluminum up to 0.040.

Machine has 2 hp motor and V-belt drive. "Cliprol" comes in two models—Model 1 1/8 and Model 1 1/2, forming 1 1/8 in. and 1 1/2 in. standing seam sections respectively. Machine measures 44 in. long x 22 in. wide, with working height of 32 in.—*The Lockformer Co., Dept. AA-8, 4615 W. Roosevelt Rd., Chicago 50.*

## Thermoplastic Welder

HAND WELDER Model 12-AW is designed for welding and tacking thermoplastics in the shop or field. Welder is said to have production

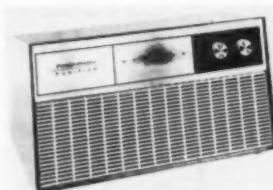


rate of up to 60 in. per minute. Flow of high-temperature air is maintained through tips suited to type of welding performed. Welder has tacker tip and one round tip, and three-heat metal heating element with output up to 800 watts. Stainless-steel barrel encloses heating element. Metal-cased rotary switch, pressure gauge, and airflow regulator are included. Sixteen-foot neoprene air-hose terminating in air-cooled handle carries electric cable inside. Unit is adapted for 115 volt a-c outlets—*Golden Plastics Corp., 333 E. 8th St., Oakland 6, Calif.*

## Air Cleaners

"PENTRONAIRE" air cleaners come in three models. AP-200 portable model is recommended for 20 x 15 ft rooms, while AP-400 port-

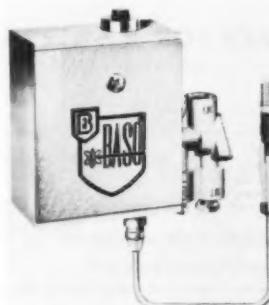
able unit can handle 30 x 25 ft rooms, according to manufacturer. Third unit, model PI-300, may be installed in air duct of controlled forced air heating or air condi-



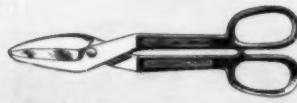
tioning systems of average six-room house, it is said. Portable air cleaners have angular baffle at the front between filter and air exit to slow up and diffuse air flow without creating drafts. Line is styled in vinyl steel cabinets and units have recessed carrying handles—*Pentron Electronics Corp., 777 S. Tripp St., Chicago, Ill.*

## Gas Pilot Switch

MODELS W850 and W853 automatic pilot switches are powered by semimetal thermocouple. The automatic switch is designed for appli-



cations requiring fast response, according to manufacturer. Both models W850 and W853 break the circuit to main electric valve if pilot light is extinguished, but model W853 shuts off pilot gas at same time. Semimetal thermocou-



COMBINATION PATTERN  
No. U412, 12" only.

## SNIPS FOR EVERY SERVICE

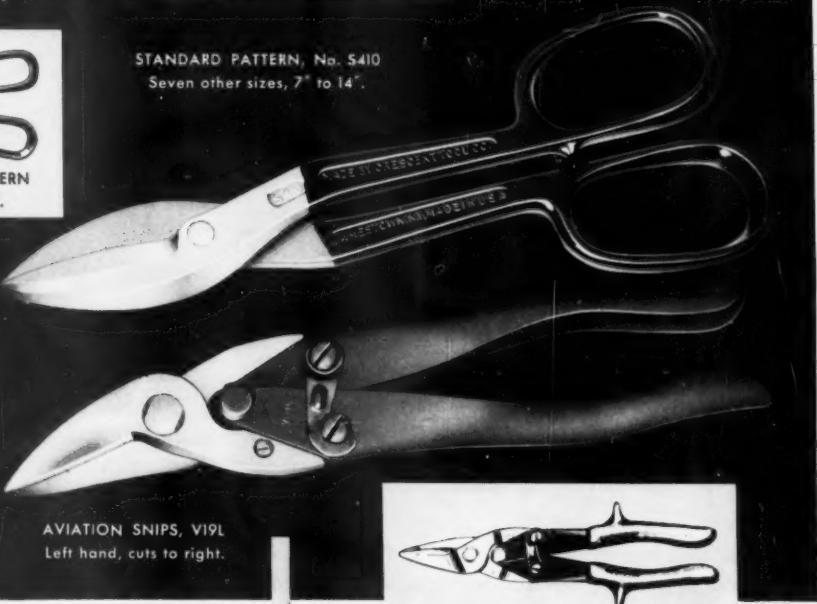


HEAVY DUTY PATTERN  
No. U416, 16" only.



CIRCULAR CUTTING PATTERN  
No. T412, 12" & T47, 7".

STANDARD PATTERN, No. S410  
Seven other sizes, 7" to 14".



AVIATION SNIPS, No. V19R  
Right Hand, Cuts to left.

AVIATION SNIPS, V19L  
Left hand, cuts to right.



NEOPRENE INSULATING SLEEVES  
Available for all Aviation Snips. Here shown  
on No. V19S, straight cut.

Crescent Tinner's Snips are forged of selected steel and blades ground on special grinding machines. They are hardened by Crescent's own selective induction process to insure long, satisfactory service. These easy-cutting, well-balanced snips are made in four patterns; standard, circular cutting, combination and heavy duty.

Sold by hardware dealers and industrial distributors everywhere.

AVIATION SNIPS. Keenly ground, hard, tough alloy steel blades with machine serrations...can be factory reground. Compound leverage produces tremendous shearing power. Three patterns.

**CRESCENT TOOLS**  
*Give Wings to Work*

Sign of the Artisan  
Symbol of Excellence



Crescent is our trade-mark, registered in the United States and abroad, for wrenches and other tools. Sold by leading distributors and retailers everywhere and made only by  
**CRESCENT TOOL COMPANY, JAMESTOWN, NEW YORK**



## "I'm an 'expert' on AIR CONDITIONING"

What he means by air conditioning and what you mean by it are as far apart as the poles. He may be an "expert" but if you really want a full picture of the latest developments in air conditioning, you can do this best at the Heating & Air-Conditioning Exposition.

Top executives, salesmen and design and production engineers will be on hand to provide specific information and money-saving tips about use of related equipment, more efficient methods of installation, maintenance techniques and anything else they know from which you can profit.

More than 500 companies participating will constitute the most concentrated and versatile range of heating, refrigeration, air conditioning, and ventilating systems, equipment, and components available and applicable to your needs. *Plan your visit now!*

# 15<sup>th</sup> International Heating & Air-Conditioning Exposition

Auspices ASHRAE

International Amphitheatre • Chicago, Illinois  
Feb. 13-16, 1961

Management: INTERNATIONAL EXPOSITION COMPANY • 480 Lexington Ave., New York 17, N.Y.

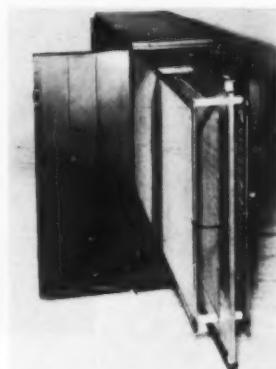
## equipment developments

(Continued)

ple generates own electrical energy and is designed for fast shutoff of complete control system. Thermocouples are available in leads of 24, 30, 36, and 60 in., and can be installed in the field—*Baso Inc.*, P. O. Box 461, Milwaukee 1, Wisc.

### Electronic Air Cleaner

EIGHT MODELS of "Statronic" electronic air cleaners come in horizontal and vertical styles, with left or right hand position of access door on all models. Four of units have maximum capacity of 5000 cfm, and four 10,000 cfm. Cleaners of heavy gage metal have all welded framing with reinforced corners, and screens are framed



with rolled edges to prevent flutter and distortion. Screens are constructed of heavy galvanized interwoven wire mesh. Safety switch de-energizes and grounds all parts when access door is opened. Two in. throw-away prefilters are furnished with all "SF" units.—*CRS Industries, Inc.*, 1405 Locust St., Philadelphia, Pa.

### Fuel Oil Odor Controllant

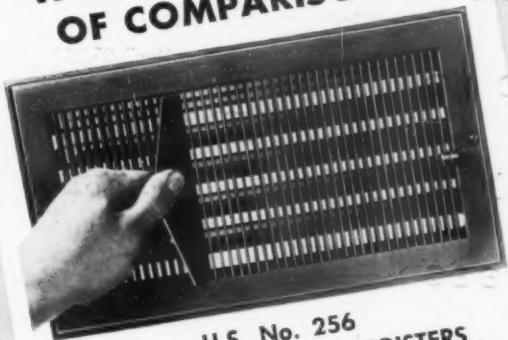
"ODO'ZONE" is used for control of residual fuel oil odors left after servicing call on oil burners during heating season, particularly when furnace is in utility room or basement playroom area locations.



# Get a HEADSTART for '61

Decide NOW to feature U.S. COMPLETE SUPREME QUALITY LINES of REGISTERS— GRILLES and DIFFUSERS

## WORLD STANDARD OF COMPARISON



**U.S. No. 256**

### AIR CONDITIONING REGISTERS

have led the field of multiple valve A.C. Registers. They provide Complete, Positive 4-way Air-Flow Control for Heating and Cooling Installations. A SUPERB QUALITY UNEQUALLED by Any Other Lines. NON-VISION, LOWEST RESISTANCE.

## PROJECT HEADLINER



**U.S. No. 1018 BASE DIFFUSER**

When you're on a project Contract where Capacity, Compactness, and Diffusion with Economy are as important as the Distribution of Air Flow, the No. 1018 U.S. Base Diffuser will assist in securing the Contract. It's only 18" long. Gives you maximum free area for such a short diffuser.

## MORE PERIMETER POWER



**U.S. Nos. 1024 and 1048  
U.S. BASE DIFFUSERS,**

recently improved, by adding additional oblong openings. U.S. No. 1000 U.S. Base Diffusers now lead the field in free area, beauty, and power. Combining of 2 ft. and 4 ft. lengths with special U.S. Connectors will make any desired longer lengths. U.S. No. 2000 Perimeter Base Intakes match the design of No. 1000 BASE DIFFUSERS.

## Select from Catalog "A"



"The most helpful register catalog ever printed, is the report from many jobbers and dealers. Write for your copy today."

## VISIT SPACE 1032

AT THE INTERNATIONAL HEATING & AIR  
CONDITIONING EXPOSITION

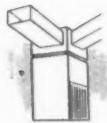


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## equipment developments

(Continued)

Where aerosol deodorants have limited effectiveness, this deodorant controls odor over slow evaporation period of fuel oil, according to manufacturer. Plastic container is uncapped and set in affected area. Solid odor controllant comes in six-ounce container, and lasts approximately one month—*Easton R. S. Corp.*, 4907 Farragut Rd., Brooklyn 3, N. Y.

### Highboy Furnace

MODEL 2630A "Trim-Boy" 65,000 Btu/h gas-fired highboy furnace is designed for small homes, garden apartments, and zone heating of larger structures. Furnaces come with direct- and belt-drive blow-



ers, with latter recommended by manufacturer for use with up to two ton remote or self-contained air conditioning units. Unit is factory wired and has two-tone gray baked enamel color styling. Dimensions are 55 x 14 x 28 in.—*The Coleman Co., Inc.*, St. Francis & Second St., Wichita, Kans.

### Thermostats

LINE HAS DIE-CAST cover frame, bi-metal thermometer, and round set-point dial with 1 deg graduations. Thermostats are available in two types (defined by electrical ratings). Light duty thermostats



## Can you understand this man's hunger for Tools?

Without them he's useless—a burden to himself and the earth. ■ With tools in his hands—a spade, a hoe, a trowel, a rake—he could raise food enough for his own family and perhaps other hungry villagers. ■ But for this man and countless others like him in Greece, in India, in Latin America and other desperately poor areas—the simplest steel implements are beyond reach. They cost too much. So millions of acres are barely scratched...with forked sticks or wooden

ploughs...and two-thirds of the world's people still go to sleep hungry. ■ Will you help them till the fertile earth...through CARE? Wherever possible, CARE food distribution is coupled with a tools-for-training program that enables men and women to become self-supporting. The need was never greater, the rewards never richer. ■ *Will you buy an extra tool*—to put into hands hungry for work, food, and dignity? ■ Send dollars to CARE, New York 16.

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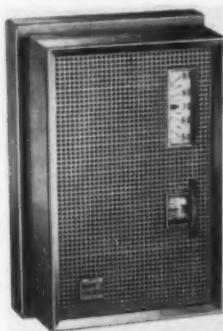
AMERICAN CANCER SOCIETY



## equipment developments

(Continued)

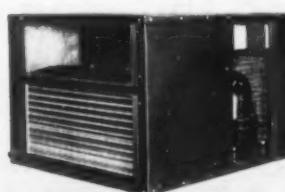
are rated: 2.5 amps at 24 volts, 1 amp at 120 volts, and 0.5 amps at 240 volts. Medium duty thermostats are rated at 1/3 hp at 210-



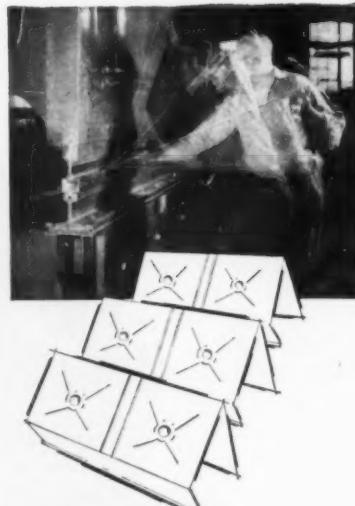
240 volts a-c only. Special dial scale, lock cover screw kit, blank cover and heaters may be added to the thermostats.—*Barber-Colman Co., Rockford, Ill.*

### Air Conditioner

"LUXAIRE" self-contained air-cooled air conditioner comes in 2 and 3 hp sizes. Unit is designed for installation with air distribution ducts and can be used in combination with forced air furnace for



year 'round air conditioning, or for summer air conditioning only with its own duct system. Compressor, condenser coil, centrifugal condenser blower and motor are housed in separate compartment at one end of cabinet. Condenser air intake and discharge are made through common protective grille extending through a wall of building. Evaporator coil, centrifugal evaporator blower and blower motor are contained in second compartment of cabinet. Cabinet is in-



### consistency...

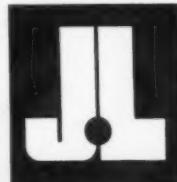
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# A HOT NEW GAS LINE AND A HOT NEW FRANCHISE

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**DELCO**  
**JANUARY 2nd**

## equipment developments

(Continued)

lated with aluminum-faced glass fiber. Cooling capacity of 2 hp unit is 23,000 Btuh, and 3 hp unit will be approximately 35,000 Btuh. Choice of controls permits continuous or intermittent air circulation—*The C. A. Olsen Mfg. Co., Filbert St., Elyria, Ohio.*

### Aluminum Damper

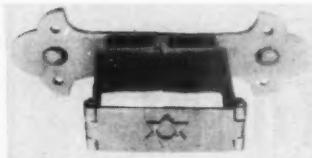
"ARROW-FOIL" extruded aluminum damper has air space between double blades to act as insulator when damper is closed.



Blade sizes of any length come in widths from 5 to 9 in. Dampers have nylon bearings, parallel or opposed action, and positive blade turning because of pin lock-groove design.—*Arrow Louver & Damper Corp., 72 Berry St., Brooklyn 11, N. Y.*

### Hinged Leader Bands

HINGED BRONZE leader bands for special church applications. Bands are for 3 and 4 in. round corrugated conductor pipe and for 2x3 in., and 4x5 in. rectangular corrugated pipe. Fastening holes are spaced for brick joints. One side



gated conductor pipe and for 2x3 in., and 4x5 in. rectangular corrugated pipe. Fastening holes are spaced for brick joints. One side

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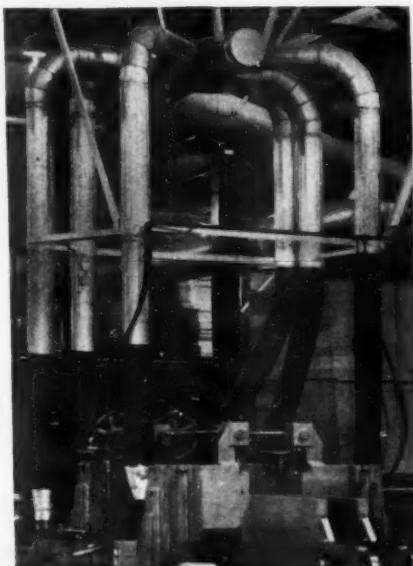
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## equipment developments

(Continued)

of band is permanently hinged, while other has loose pin permitting removal of leader without removing band from the wall—*David Levow, Inc., 9 Georgia St., South Hackensack, N. J.*

### Coil-Blower Unit

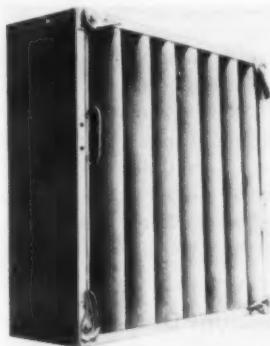
RATED AS ALL-PURPOSE air conditioners by manufacturer, "Season-makers" come in two types, one a

ceiling or other concealed locations. Nominal capacities are from two to ten tons, with direct or belt drive on ceiling models. Units are for use with direct expansion systems. They have three-speed operation, anti-sweating double drain pans with closed cell insulation, and auxiliary drain pan to catch condensation from control or shut-off valve—*McQuay Inc., 1600 Broadway, N. E., Minneapolis 13, Minn.*



ceiling unit for suspended installation and the other a hideaway model for installation above furred

is chemically fire-proofed and resistant to moisture and vermin.



### Panel Air Filter

SINGLE SHEET plastic media "Foamat" air filter is designed as permanent filter that won't pack, settle, or separate, according to manufacturer. It may be washed in filter bank with spray-head hose nozzle. Filter media is pleated into holding frame to obtain maximum area for dirt storage. Filter

Three models with capacities up to 1800 cfm are designed to handle velocities ranging to 450 fpm—*American Air Filter Co., Inc., 355 Central Ave., Louisville 8, Ky.*

### Charging Hose

FLEXIBLE CHARGING hose, suitable for use with R 12 or R 22 refriger-

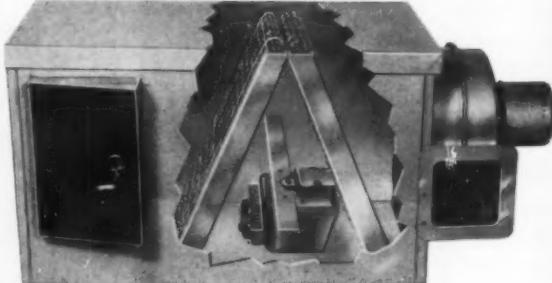
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## equipment developments

(Continued)

ants, comes in 3 ft length. Model 12148-36 has gas-tight neoprene core with woven cover, and finger

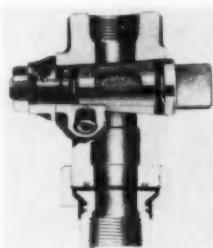


tightening knurled nut couplings with one at 45 deg angle—Robin-air Manufacturing Corp., 1224 S. East Ave., Montpelier, O.

### Insulating Pipe Union

INSULATING PIPE UNION is used to isolate furnace service lines from house piping. Separate elements for sealing and insulating anti-leak union are component parts of stop

body and union tailpiece. Sealing element is slightly compressed in groove in face of stop outlet to prevent it from flowing into gas-way and for protection from damage by union nut threads. Seal is maintained in union even if torque on coupling nut is relaxed, it is said. Maximum working pressure of insulating union is 125 psi, and



temperature range for continuous operation is from minus 20 to 150 F—Mueller Co., 512 W. Cerro Gordo, Decatur, Ill.

### Portable Voltmeter

INSTRUMENT IS USED to determine whether periodic low voltage situations are responsible for malfunctioning of heating and air con-



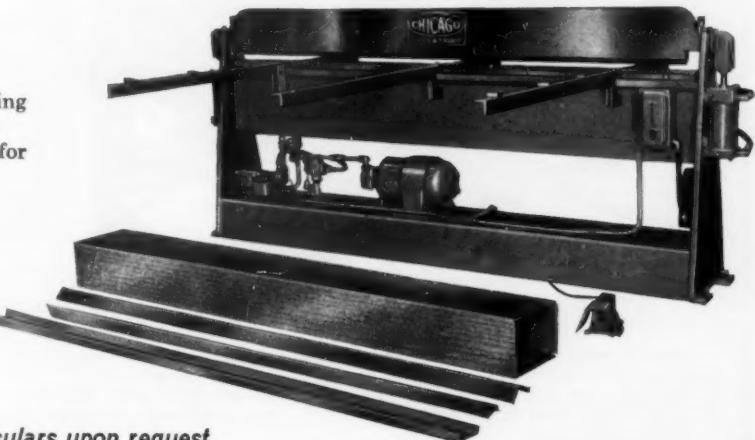
ditioning equipment. Voltmeter makes continuous record of actual voltage supplied by 115 volt or 230 volt a-c power source, covers ranges of 70 to 135 volts, and 140 to 270 volts. Restricted ranges permit wider spacing of chart record. Instrument records continuously for 31 days on paper using smudge-proof dry-marking process. Needle contacting the paper momentarily every two seconds

## Production Bending for duct sections and long, light-gauge work

### CHICAGO® SPEED-BENDER

- 8 feet of 24-gauge or 5 feet of 20-gauge galvanized steel
- Adjustable front gauges; disappearing pin gauges for bending from notches; and spring-loaded gauge pins to make  $\frac{1}{4}$ -inch edge for Pittsburgh lock
- Hydraulic operation
- Foot-switch control
- Two-position foot switch can be supplied for 90° bends and for shallow bends as in cross-braking

*Full particulars upon request*



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## equipment developments

(Continued)

gives accuracy of 2 percent of full scale, according to manufacturer. Voltmeter measures  $3\frac{1}{8} \times 5\frac{5}{8} \times 4\frac{1}{8}$  in., weighs  $3\frac{1}{2}$  lb—*Airserco Mfg. Co.*, 435 Melwood Ave., Pittsburgh 13, Pa.

Nibbler has its own power unit, and several  $\frac{1}{4}$  in. industrial drills can be used as alternate power source—*C. W. Lind Co.*, P. O. Box 7501, 3403 Penn Ave., Minneapolis 22, Minn.

### Sheet Metal Nibbler

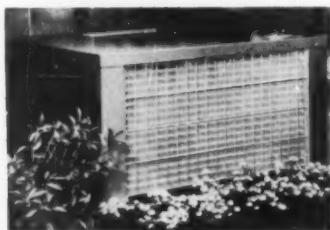
SHEET METAL hand nibbler is designed to cut metals up to 18 ga mild steel and up to  $1/16$  in. lam-



inated plastics. Radial cuts in light materials, and square, rectangular hole or straight cuts from  $\frac{1}{4}$  in. starting hole are also possible.

### Condensing Unit

HIGH CAPACITY centrifugal blower featured on 2 hp, 22,000 Btu/h remote air cooled condensing unit (Model 938-21). Blower is de-



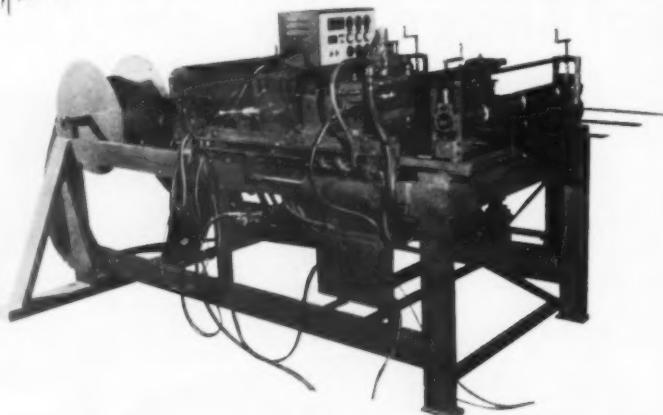
signed to operate at low speeds to reduce wear and air noise. Unit

also has sealed ball bearings and special cushion-mounts for reduction of sound levels. Both side panels are removable and all components are accessible for installation and service. Many parts and controls of 938 series are standardized and interchangeable with other models—*Mueller Climatrol*, 2005 W. Oklahoma Ave., Milwaukee 1, Wis.

### Return Air Grilles

"CONVERT-IT" return air grilles have removable modules that allow grille to be converted into vertical or horizontal unit. All-nylon square modules are injection molded in one piece with vanes set at 30 deg angle, allowing total free area of approximately 75 percent based on core area, according to manufacturer. Section assemblies are contained in extruded aluminum frame that gives rigidity in larger sizes, it is said—*Airguide Plastics Corp.*, 20 S. E. 3rd Ave., Miami 32, Fla.

### NEW AUTOMATION for PANEL and ROLL FORMING MACHINES



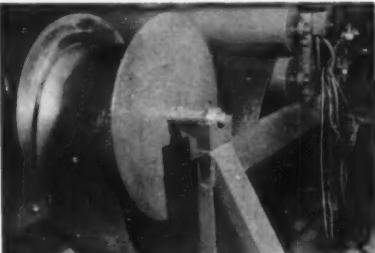
Increase production at least 50% with less labor. The WELTY-WAY FEEDER-SHEARER automatically feeds metal of nearly any length . . . cut to the exact inch . . . into your fabrication machine. It holds metal coil, straightens metal, pulls metal from coil, levels it, shears it, moves it through a flying shear and feeds it into your fabrication machine.

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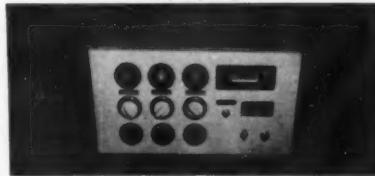
**Welt-Way PRODUCTS CO.**  
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Powered cradle supports up to 10,000 lb. roll of coiled metal.



Flying shear automatically snips metal of nearly any length.



Predetermined length setting is controlled by electronic eye. 2 - 100 feet.

## equipment developments

(Continued)

### Dust Collector

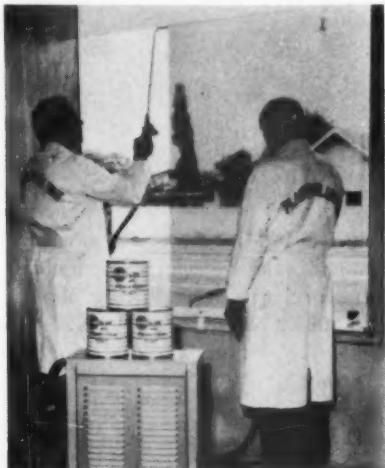
DUST COLLECTORS in sizes ranging from 1980 to 17,825 cfm have siliconized glass fabric bags designed to withstand temperatures of 550 F. Bags are 11½ in. in diameter and come in 14 to 21 ft lengths. They are collapsed pneumatically to dislodge collected dust. Cylindrical dust collector has pre-fabricated inter-locking steel panels with 60 deg conical hopper. Upper and lower service levels have walkways, and caged ladder



gives access to upper internal inspection platform—*American Air Filter Co., Inc., 355 Central Ave., Louisville 8, Ky.*

### In-Place Window Tints

PLASTIC TINTS for coating windows in place comes in nine transparent and three frosted tints. Liquid plastic is applied with nozzle at top edge of window to be coated, nozzle moving at a steady rate across



top edge without retracing, producing "ideal" thickness of one-thousandth in. Coating has same properties as optical filter, it is said, the various tints excluding various percentages of solar heat, glare, and fade producing portions of spectrum—*The McCarty Co., 3576 Wilshire Blvd., Los Angeles 5, Calif.*

### Air Duct Calculator

MULTI-PURPOSE pocket-sized air duct calculator uses single slide. Calculator simplifies material estimating and duct sizing by equal-friction or velocity-reduc-



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Seal it with Arno Ductape. Unsealed ducts can't be efficient. A test in a typical home increased air flow at room registers an average 21% — simply by sealing all accessible duct joints with Arno Ductape, which sticks instantly and holds permanently.

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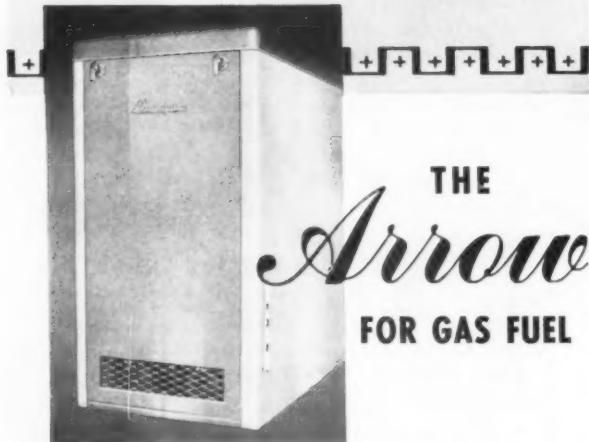
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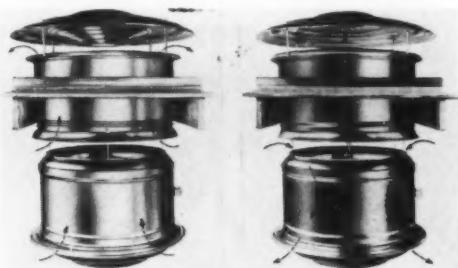
**Dowagiac STEEL FURNACE COMPANY**  
DOWAGIAC, MICHIGAN

**equipment developments**  
(Continued)

tion methods. Says manufacturer, single slide setting gives following calculations: friction per 100 ft of duct; cfm; velocity in fpm, round duct diameter (and rectangular equivalents) in inches; pounds per lineal ft of round duct for various gages of galvanized and aluminum duct; surface area in sq ft per lineal ft of round duct; pounds per lineal ft of various gages of galvanized and aluminum duct along with surface area in sq ft per lineal ft. Calculator also simplifies insulation requirement computations, it is said. Data abstracted from Heating Ventilating Air Conditioning Guide (1959) is printed on back of calculator, which measures 4 × 8½ in.—Paul S. Morton Engineering Service, 5131 Meadowlark Lane, Kalamazoo, Mich.

**Power Roof Ventilator**

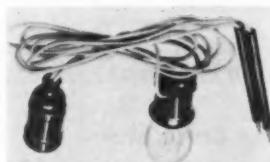
"GENIE-AIR" (Model ER) dual-purpose power roof ventilator exhausts air in the summer and recirculates it during the winter. Heat trapped under roof line is recovered and returned to floor area, with substantial



savings in fuel bills, according to manufacturer. Positioning of selective control switch changes ventilator operation from exhaust to recirculation. Sizes range from 3000 to 23,000 cfm—Genie Air Products, Division of N. T. W. Corp., 3001 E. 11th St., Los Angeles.

**Test Lamp**

TEST LAMP (12167) for cooling equipment continuity checking can operate either on power independent of equipment to be tested or off equipment's ener-



gized circuit. Lamp has 230-volt bulb, can be used on both 230 and 110-volt circuits. Twin probes are

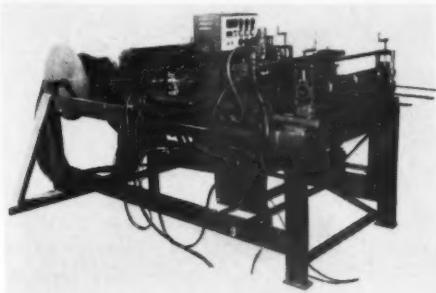
## equipment developments

(Continued)

placed on circuit to be checked: if bulb glows, circuit is complete; if not, circuit contains break—*Robinair Mfg. Corp., Montpelier, Ohio.*

### Feeder-Shearer Machine

AUTOMATIC FEEDER-SHEARER for roll-forming machines straightens and pulls metal from coil, levels and shears it, moves metal through flying shear, and feeds it into fabrication machine. Powered cradle



rack supports up to 10,000 lb roll of metal. Flying shear snips metal to inch measurements. Electric eye controls length settings and counts number of ft of metal fed into roll-forming machine—*Welt-Way Products, Inc., 714 First Ave., N. W., Cedar Rapids, Iowa.*

### Heat Pump

"ELECTRO-FLOW" heat pump is offered for installation only with remote condensing unit installation. The condenser section is installed outdoors. Indoor section consists of a heating-cooling coil and a blower.



filter unit, which can be arranged for vertical, counterflow or horizontal installation, according to the manufacturer. Mechanical features of the outdoor section include a charge stabilizer which adjusts the varying amounts of refrigerant used; sight glass

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FOR YOU..."**

*on the profit end  
of this fast-moving  
warm air heating  
organization"*



C. C. Whitcomb, President  
Kalamazoo Furnace & Appliance  
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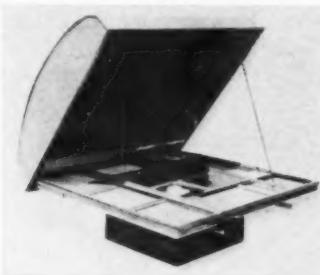
## equipment developments

(Continued)

moisture indicator; filter-drier and coil. Cooling capacity is 36,000 Btuh at 95 F, heating capacity 37,000 Btuh at 45 F—*Stewart-Warner Corp., Heating and Air Conditioning Division, Lebanon, Ind.*

### Roof Ventilator

MODEL TSD roof ventilator supplies filtered air in sufficient quantities for most industrial applications, according to manufacturer. Unit delivers approxi-



mately 6000 cfm with standard  $\frac{3}{4}$  hp motor. Filter velocity is 300 fpm and filtration efficiency approaches 100 percent on particles in the 10-20 micron range, it is said—*Western Engineering & Mfg. Co., P. O. Box 66455, Los Angeles 66.*

### Electric Water Heaters

UPRIGHT and tabletop electric water heaters in capacities ranging from 30 to 120 gallons. Line features glass-lined tanks with magnesium anode rods for protection against rust, liming and corrosion. Clamp-on type elements are enclosed in element channel to provide more heat in tank and ease of servicing. Snap action thermostats are bolted to welded mounting bracket. Side location of combination inlet and drain cock designed to solve installation problems—*Teter, Inc., 13901 S. Indiana Ave., Chicago 27, Ill.*

### Condensing Unit

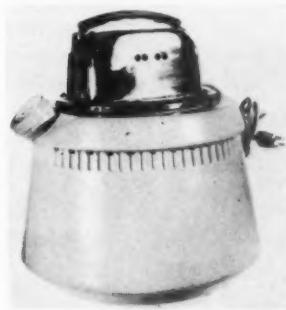
"COMMAND-AIRE" air cooled condensing units have capacity of 36,000 Btuh, with compressors rated at 3 hp. Compressor with 12 in. diameter and  $1/3$  hp centrifugal blower is permanently lubricated and has hermetically sealed bearings, according to manufacturer. Single phase (CA-301) or three-phase (CA-303) wiring diagrams come with units shipped assembled, piped, wired, and with all safety devices installed (including high-low shutoff). Units are designed to operate during extended periods of weather over 100 F, according to the manufacturer.—*Texas Products Mfg. Co., 919 Taylor Ave., Waco, Tex.*

## equipment developments

(Continued)

### Portable Humidifier

PORTABLE HUMIDIFIER has electrical heating element suspended above water level. Spinner at-



tached to electric motor lifts drops of water and sprays them against heating element to form vapor. Steam is not visible, and when introduced at room temperature there will be no visible condensation, according to manufacturer.

Float control switch shuts off current to heating element when water reaches its low level. Unit operates on 110 volts, and one water filling lasts 12 hours. Humidifier available in ivory, pink, and turquoise—Rotherm Engineering Co., Inc., 7280 W. Devon Ave., Chicago 31.

### Plastic Roof Ventilator

SOLID PLASTIC roof ventilator has impeller unit for upblast discharge to carry corrosive fumes high into the air. Impeller has backward-curved blades and extended hub construction in which plastic only is in contact with fumes. Units have either direct or adjustable V-belt drive—Heil Process Equipment Corp., 12901 Elmwood Ave., Cleveland 11, Ohio.

### Thermostat

EIGHT DIFFERENT switching combinations for heating-cooling systems are possible on the "Push-Button", whether system is controlled from a single unit or by change-over to a separate heating thermostat. Thermostat has sealed mercury contacts, and is "anti-



pated" to afford operating differentials down to  $\frac{1}{2}$  deg (heating) and 1 deg (cooling). Sub-base has built-in level-bubble intended to save on installation time. Bimetal thermometer can be recalibrated with small screwdriver from the rear. Thermostat measures  $3\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{7}{8}$  in.—White-Rodgers Co., 1209 Cass Ave., St. Louis 6, Mo.



BIG TWIN  
250 AC/DC



LITTLE TWIN  
180 AC/DC

### AND BOTH MILLERS ... Through and Through

BIG TWIN combination ac-dc welders work from single phase service—deliver new convenience and economy. Two a-c amperage ranges of 20-125 and 60-290 plus two d-c ranges of 18-100 and 65-290 amps master nearly every welding requirement from light gauge metal to structural pieces. Movable shunt type transformer affords infinite current adjustments. Other features include: Horizontal design for easy stacking; weather-resistant construction and Class B insulation; Miller-built semi-metallic rectifier for best d-c welding; high open circuit voltages and new weld stabilizer. This is THE all-time, all-around welder!

LITTLE TWIN ac-dc combination welder has two a-c amperage ranges of 20-115 and 60-180 plus one d-c range of 40-150. Operating from single phase service, this Miller model incorporates many design and construction features usually found only in large industrial types. These include really rugged construction, forced air cooling, new Miller semi-metallic rectifier, movable shunt type current control, new weld stabilizer and open circuit voltage in abundance. Power factor correction is available on both models. Complete specifications on either model will be sent promptly upon request.



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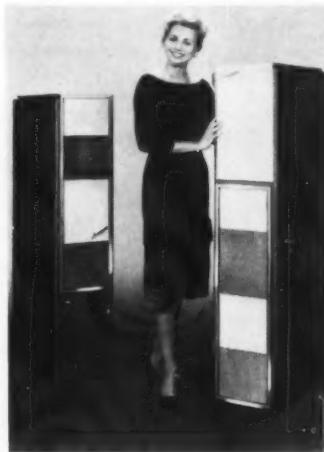
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56 Rugby Pl., Montreal West, P.Q., Canada

## equipment developments

(Continued)

### Counterflow Furnaces

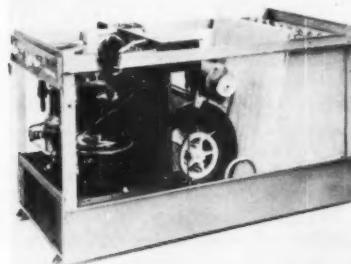
GAS-FIRED counterflow furnaces Series 700 come in 60, 80, 100 and 120,000 Btu/h capacities. Cabinets on 60,000 and 80,000 Btu/h models measure 12 in. wide, 25½ in. deep and 59 in. high. 100,000 and 120,000 Btu/h models have same height and depth, 20 in.



width. Flue connections are 4 in. diameter on 60 and 80,000 Btu/h furnaces, 5 in. on 100 and 120,000 Btu/h models. All models feature modified section heat exchangers, foil-faced glass fiber cabinet liners, built-in removable permanent-type filters, blowers sized for air conditioning as well as heating—*Armstrong Furnace Co., 851 W. Third Ave., Columbus 12, O.*

### Hermetic Compressors

TWIN HERMETIC compressors of "Rheemaire" RA-110 condensing unit are dual-circuited for use in air conditioning two areas (each with its own air han-



dler) or for two-stage cooling. Time delay relay prevents both compressors from starting at once. Combination of condenser with dual compressors permits operation on single-phase service—*Rheem Mfg. Co., 7600 S. Kedzie Ave., Chicago 52.*

## *new literature . . .*

### **Gas Vent Installation**

GVI BULLETIN No. 2 is the second in a series of bulletins dealing with modern methods of gas vent installation. It has been released to local code officials and utility company executives throughout the country. Available to all who are interested in venting problems, the bulletin covers advantages to be gained by the use of Type B double wall metal vents in place of Type C single wall pipe for vent connectors. Future releases will cover various phases of gas venting and proper installation of UL listed gas vents—*Gas Vent Institute*, 333 N. Michigan Ave., Chicago 1.

### **Stainless Steel in Architecture**

ARCHITECTURAL USES of stainless steel are described and illustrated in the fall issue of *Stainless Steel Architectural Quarterly*. Featured are photographs showing ground level applications (stainless steel doors, a stainless steel canopy, entrance framings, etc.); a detail drawing of the stainless sheathing used on the Gateway Center building in Pittsburgh; and a report on latest colors and textures available—*Committee of Stainless Steel Producers, American Iron and Steel Institute*, 150 E. 42nd St., New York 17.

### **Humidifiers**

HOW DRY AIR AFFECTS HEALTH and household furnishings is explained in a 15-page review discussing the need for proper humidification of homes in winter. The report discusses relative humidity, causes of dryness in winter and costs of humidification. Three types of humidifiers are described—*Walton Institute of Humidification*, 427 Bloomfield Ave., Montclair, N. J.

### **Plastic Exhaust Systems**

LITERATURE DESCRIBES PLASTIC VENTILATING and exhaust systems for applications involving corrosive fumes. Company can furnish complete systems, also components to cover all phases of fume ventilation from the exhaust hood to the fan and to the weather cap above the roof—*American Agile Corp.*, P. O. Box 168, Bedford, O.

### **Press Brakes**

BULLETIN No. SS-60 on straight side type press brakes describes principal construction features and gives general specifications. Included are illustrations showing typical applications—*Dreis & Krump Mfg. Co.*, 7400 S. Loomis Blvd., Chicago 36.

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**POWER-DRAFT UNITS  
DESIGNED FOR RESIDENTIAL,  
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APPLICATIONS**

- ★ No motors, fans or bearings in exhaust line
- ★ Needs no stacks ★ Acid-resisting vitreous enamel finishes ★ Extremely high static pressures now available

**FOR HEATING PLANTS AND INCINERATORS . . .** Quickdraft provides constant draft for efficient and economical combustion. It eliminates pulsating or chattering, puffing, smoking and sooting. Costly, tall, unsightly stacks are unnecessary.

**FOR INDUSTRY . . .** Quickdraft now offers extremely high static pressures for EXHAUSTING corrosive gases, abrasives and paint sprays . . . for CONVEYING all types of bulk materials or wastes that can be moved by air.

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### new literature

(Continued)

### Electric Heating

"FRESH AIR ELECTRIC HEATING" (40 pages) emphasizes that successful application of electricity to house heating requires adherence to modern principles of air distribution. Included are discussions on good house construction as well as descriptions of various methods of heating by electricity. It is pointed out that the forced air distribution system permits the addition of such accessories as humidifiers, dehumidifiers, electrostatic air filters, activated charcoal purifiers, sterilizing lamps, etc. One section describes the company's electric heating products and includes six pages of floor plans with recommended duct layouts —Lennox Industries Inc., 200 S. 12th Ave., Marshalltown, Iowa.

### Spiral Duct Machine

BOOKLET DESCRIBES MACHINE FOR FABRICATING spiral metal ducts suitable for various applications including air distribution systems. According to the company, ducts produced on the machine have great structural strength and rigidity, are light in weight and easily installed. Machine can produce ducts from a variety of materials such as aluminum, zinc, copper, stainless, galvanized and plastic-coated steel—Spiro U.S.A., Inc., 20 N. Wacker Dr., Chicago 6.

### Adhesives, Coatings and Sealers

USES, CHARACTERISTICS AND GENERAL PROPERTIES of over 170 adhesives, coatings and sealers are discussed in catalog A-ZBD-102-JR (12 pages, two colors). Send request on company letterhead—Adhesives, Coatings and Sealers Div., Minnesota Mining and Mfg. Co., 900 Bush Ave., St. Paul 6.

### Squirrel Cage Induction Motors

BULLETIN ON SQUIRREL CAGE induction motors (12 pages) outlines applications, performance characteristics, and mechanical design variations. Construction and insulation details, ratings and dimensional information are included—Century Electric Co., 18th & Pine Sts., St. Louis 3.

### Power Fastening Tools

REFERENCE MANUAL H-46 contains charts, graphs and illustrations as well as text describing the "Hilti" system for making industrial fastenings. Illustrated are fastening tools, fasteners, booster caps and accessories available—Hilti, 73 Southfield Ave., Stamford, Conn.

## new literature

(Continued)

### Planning for Profit

A STEP-BY-STEP APPROACH to future profit possibilities based on planning and control is outlined in "Guides for Profit Planning" (SBA Management series No. 25). Among subjects discussed are three types of analyses — break-even, gross profit, and rate of return on investment. According to the booklet, all three types of analyses will help a small business man to predict profits under a variety of possible circumstances. Copies are priced at 25 cents—*Government Printing Office, Washington 25, D.C.*

### Sheet Metal Working Machinery

CATALOG No. 161 (84 pages) illustrates and describes standard punches and dies as well as sheet metal working machinery. Designed for use as a reference, it contains, in addition to product information and photos, tables showing fraction and decimal equivalents, decimal equivalents of number size drills, decimal equivalents of letter size drills and other information used in the sheet metal industry—*Ward Machinery Co., 564 W. Washington Blvd., Chicago 6.*

### Ductwork Sealants

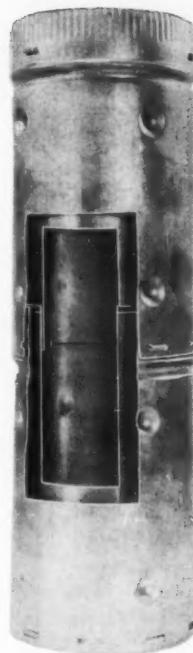
ENVELOPE STUFFER describes adhesives, sealants and tapes for heating and air conditioning ductwork. Characteristics and properties of each product are listed, specific uses are discussed and details of application methods are given—*Permacel, P. O. Box 671, New Brunswick, N.J.*

### Air Blenders for High Velocity Systems

OPERATION of "TWIN-DUCT AIR BLENDERS" for high velocity, double duct air conditioning systems is described in catalog 1100-B107. According to the company, both ceiling and under-window air blenders operate without the use of motors, piston operators, or mechanical linkage. Catalog includes detailed engineering information, selection and performance data, and dimensional drawings—*Worthington Corp., Air Conditioning Div., Technical Publication Section, Ampere Sta., East Orange, N.J.*

### Sound Control

BOOKLET F-10180 describes a sound slide film entitled "Making Sound Behave." Decibel variations and air distribution sounds of different frequencies have been recorded for the presentation—*Barber-Colman Co., 1706 Rock St., Rockford, Ill.*



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**A NEW ADDITION  
TO THE FAMILY**

**DOUBLE WALL  
SAFETY-VENT  
& FITTINGS**



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**Don't Gamble with Less than a Product—  
with Years of Proven Performance**

No combustion chamber compares with INSTANT-GLO —

The chamber glows cherry-red in 5 seconds from burner starting and gives all 'round:

★ **TOP PERFORMANCE**

Cannot lose shape or fall in. INSTANT-GLO's thick insulating brick wall gives maximum sound absorption. It's rugged . . . outlasts combustion chambers of inferior materials.

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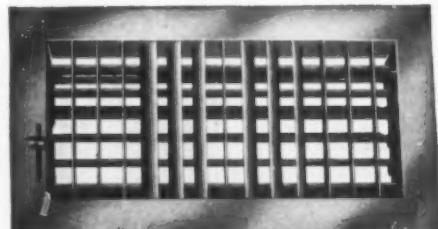
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not fair to the  
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**MODEL AV-7—AIR VANE HIGH EFFICIENCY TYPE**  
For cooling and heating, four-way deflection  
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**ARRO-FLO DIFFUSOR AF-20" and AF-30"**  
HIGH EFFICIENCY BASE-BORD TYPE OUT-OF-WALL  
REGISTER FOR BOTH HEATING AND COOLING PUR-  
POSES. Our distinctive Arro-Linx styling blends with any sur-  
roundings, measuring only 3 1/8" in height, allowing for ideal  
installation under windows.

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**GRILLE AND  
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## *we hear that . . .*

► SOME 75 HEATING and air conditioning service personnel attended the recent General Controls Co. "Service Circle" meeting sponsored by the Institute of Heating and Air Conditioning Industries. Held in the Southern California Gas Co. auditorium in Los Angeles, the session included discussions on servicing air conditioning and heating controls, installation procedures, and special problems encountered by servicemen. Visual aids were used to demonstrate procedures.



**C. A. Olsen**

► C. A. Olsen has been elected chairman of the board of the Johnson Furnace Co. Mr. Olsen is a past president of the National Warm Air Heating and Air Conditioning Association and a former director of the National Association of Manufacturers.

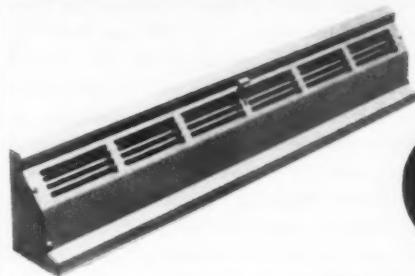
► LIMBACH Co., mechanical contracting company with headquarters in Pittsburgh, has begun construction of a new office and plant in Boston. F. Allen Mansfield has been appointed manager of the new branch. According to the company, the Boston operation represents a \$1 500,000 investment, will employ about 400 people from the area.

► FRANK J. NUNLIST has been appointed vice president, operations, of Worthington Corp. In his new position, Mr. Nunlist will be responsible for the activities of the firm's 16 domestic operating divisions. He was formerly group vice president of the company, and before that was executive vice president of the Mueller Climatrol Div.

► A 16MM FILM IN FULL COLOR and sound on shielded arc welding procedures has been produced by the Air Reduction Sales Co., a division of Air Reduction Co., Inc. Titled "Fundamentals of Manual Shielded Arc Welding Techniques," the film is adapted from General Electric Co.'s previously released six-film series, "Inside Arc Welding." It has been edited to two reels, has a running time of 45 minutes. The four basic principles of arc welding — current setting, speed of travel, length of arc, and angle of electrode — are graphically explained.

► A NEW SYSTEM OF PACKAGING is now being used by Parker-Kalon Div. of General American Transportation Corp. The new bulk keg contains 2500 to

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## BASEBOARD DIFFUSERS

Atlas #761 Baseboard Diffusers available in 4 sizes — 18", 24", 36", & 48", — High output and throw — outstanding pattern for both heating and cooling. Installed with minimum labor — rugged construction that resists dents. A quality product at a competitive price — Immediate shipments — Also available in WHITE!

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# V-Belts

... absorb  
more vibration

... and this is not an idle claim! Laboratory tests back up "Silentride" performance in reducing noise and vibration.

"Silentride" Belts are especially designed for heating and air conditioning equipment, window and attic fans.

More information on request.

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Zatko—World's Largest Manufacturer of stamped one-piece Pulleys

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The right SNIPS for the job!



KDC-5 PIPE CUTTER  
New Double Cam Action Pipe Cutter  
—for duct work, stove pipe, etc.  
w/grips \$5.30, w/spur \$5.00

See your local wholesaler or contact us direct for the name of our local distributor, wholesaler.

Klenk's double action tools give you 20% more power with less effort. This is made possible by more opening in the jaws and less opening in the handles. All Klenk tools are easy to assemble and any part can be replaced in a few minutes.

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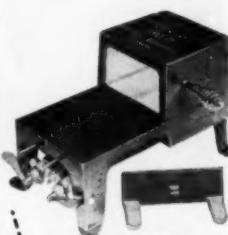
## High, efficient heat

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Bench Furnaces for soldering coppers, heat-treating, tempering, annealing, case-hardening

### No. 101

A powerful, economical bench furnace for any carbon steel tool or small metal parts work. No blower is needed, hence no muffle. Johnson patented curved hood forces return blast over work. Equipped with baffle plate, shut off valve and pilot light. Firebox 3 3/4" by 4 1/2" by 5 1/2" 13,000 BTUs per hour per burner.

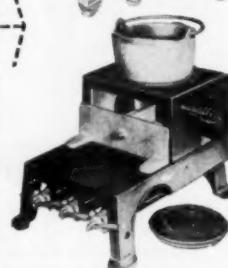


### No. 118 Combination

Ideal for all around shop use. Has 22-lb. capacity melting pot for soft metals such as lead and babbitt. Shelf in rear of firebox supports and protects points of soldering coppers. Johnson patented curved hood. Refractory lined firebox 6 1/4" by 5" by 6 1/2". 13,000 BTUs per hour per burner. Baffle plate maintains heat and even temperature.

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Since 1881

# FLANGES THE DUCT with Amazing Speed!

Less than 5 seconds on short  
and lighter pieces . . .  
Slightly longer on bulkier pieces

## MAKES PERFECT DRIVE-CLEATS TOO!

The ONLY tool that does both.  
A complete drive cleating tool . . .  
no set-up time . . . no adjustments.  
Handy to take out to the job when  
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any square duct up to 20 gauge.  
Quickly pays for itself in time,  
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**PERFECT**  
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## we hear that

(Continued)

25,000 fasteners, depending upon size and type. Thousand-at-a-time users of tapping screws can order "Grand-Pak" cartons, containing 1000 pan head type A tapping screws in bulk, or may order ten "Grand-Pak" cartons which will be delivered in one master shipping container. For users of gross packages, 10 one-gross packages are available in the intermediate-size container, and 10 of these in turn can be delivered in the master shipping container. New easy-to-read labels indicate type, size, number, head style, finish and quantity of the contents of each carton.

► THERMO PRODUCTS, INC., has completed a new addition to its manufacturing facilities. According to the company, the addition to its North Judson, Ind., factory will permit an increase of storage and shipping facilities, will also make room for an expanded production area.

► THE MATHES CO., Div. of Glen Alden Corp., recently held a day-long national sales meeting where dealer-contractors and distributors from all parts of the country previewed new equipment, learned about company expansion plans, and heard details of sales

## STAINLESS STEEL for Longer Life Easier to Install for GREATER PROFIT

### Vaporite HUMIDIFIERS

BACKED BY 35 YEARS OF MANUFACTURING KNOW-HOW

#### NEW Completely STAINLESS STEEL MODEL 999

- New styling for greater sales appeal
- Engineered to avoid costly "callbacks"
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- Completely assembled for 30-minute installation



For any straight side  
warm air furnace

#### THERMOSTAT CONTROLLED MODELS 555C and 577

PROVED BY 20 YEARS USE IN MIDWEST

- STAINLESS STEEL VAPOR PAN — heats more quickly; vaporizes water faster
- AUTOMATIC DRIP-FEED VAPORIZATION — Thermostatically controlled



For any straight  
side warm air furnace

SERIES 555C



SERIES 577  
For slanting  
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PRE-ASSEMBLED FOR  
30-MINUTE INSTALLATION  
WRITE FOR FREE LITERATURE

**AUTOMATIC HUMIDIFIER CO.**  
CEDAR FALLS, IOWA

## **we hear that**

(Continued)

training and other programs being conducted by the company. New equipment introduced included residential and commercial remote type air conditioning units, room air conditioners, heat pumps, condensing units and hermetic package units.

► ROBERT C. DUKES has been elected president of Tempromatic Corp., DeLand, Fla. Other officers elected by the board of directors are: Virgil W. Tipton, executive vice president; Charles E. Low, vice president; Barbara C. Paulling, secretary; and Charles B. Lowe, treasurer.

► FENWAY MACHINE Co. has moved to larger headquarters at 1910 N. Marshall St., Philadelphia. According to Joesph Yermish, general manager, expanded engineering and manufacturing facilities were necessary to meet growing demands for the company's portable nibblers.

► THE GENERAL OFFICES of Joesph T. Ryerson & Son, Inc. have been moved into the firm's new general office building recently completed at 2621 W. 15th Pl., Chicago. The location is adjacent to Ryerson's Chicago steel service center. The new office is a two-story, 210 ft square structure.

► THE WALTON INSTITUTE of Humidification has been formed to conduct humidification research and to disseminate information to those interested in the subject. The institute will maintain a basic library of books, pamphlets, papers and other material at its headquarters, 427 Bloomfield Ave., Montclair, N. J.

► FEATURED at the annual joint sales conference of the two Typhoon divisions — Typhoon Air Conditioning and Typhoon Heat Pump — of Hupp' Corp. was the introduction of 28 new products, including packaged air conditioners and heat pumps. John Gilbreath, sales vice president, described a \$200,000 promotion plan for local level marketing assistance. He displayed samples of advertising and promotional material and distributed marketing kits for use as guides in planning local promotion programs.

► ENGINEERS OF LENNOX INDUSTRIES INC. gathered recently at the Marshalltown, Iowa, plant to attend the company's annual service conference. Representing all areas of the United States and Canada, the men are familiar with varying climates and the problems encountered in different parts of the country. The week-long conferences are held each year for the purpose of discussing new products and developing better installation and servicing techniques.

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**HEATING & VENTILATING CO.**

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Since 1894

**AKRON, OHIO**

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MAKE CUTS LIKE THESE

QUICKLY...  
EASILY...ACCURATELY

1/8 ga. metal  
cut with  
Model B-1  
Shear.

Save time, labor and material—use a Beverly to make any cut... straight, curved or irregular in any metal. Exclusive design allows work to be turned at any angle while cutting. Standard in the industry for years. 4 models—capacities to  $\frac{1}{2}$ " mild.

See your Beverly Distributor for a demonstration. Write for FREE illustrated circular on Beverly metal cutting Shears.



**MODEL  
B-3**  
with ball  
bearing  
hold down.  
Cap.  $\frac{1}{2}$ "  
mild; 10  
gauge  
stainless.

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**BLOW PIPE PARTS**

any size or type

Write for Literature and Prices  
**THE KIRK & BLUM MFG. CO.**  
3180 FORRESTER ST. • CINCINNATI 9, OHIO

**KIRK & BLUM**

## appointments . . .

► JOHN E. CRAIG as general sales manager of the Welbilt Air Conditioning and Heating Corp. Mr. Craig was previously associated with National-U.S. Radiator Corp. and before that was with the Air-temp Div. of Chrysler Corp.

► JACK H. SCHOFIELD as product sales manager for "Pop" rivets made by the United Shoe Machinery Corp. Mr. Schofield was formerly assistant product sales manager. He succeeds Charles E. Heilig Jr.



Jack H. Schofield



Charles C. Miley

► CHARLES C. MILEY as manager of blower sales for The Lau Blower Co. Mr. Miley, with the company for 21 years, has served in various capacities, most recently as sales engineer in parts of Ohio, Indiana and Pennsylvania.



Edward E. Harwood



John H. Martin

► EDWARD E. HARWOOD as sales manager, Original Equipment Manufacturer Div., White-Rodgers Co. John H. Martin has been appointed sales manager, Wholesaler Div. Both positions are newly created. Mr. Harwood has been with the company for 23 years, was formerly manager of the Cleveland region. Mr. Martin previously served as manager of the marketing and research division.

► A. L. THYS as sales manager for Cain Manufacturing, Inc. Mr. Thys will supervise sales of products for the sheet metal industry, which include flexible duct connections, louver rails, vane rails, duct tape, adhesives and duct turning vanes.

## appointments

(Continued)



Ronald W. Lindsay



John M. Beck

► RONALD W. LINDSAY as director of marketing for The C. A. Olsen Mfg. Co. Mr. Lindsay was previously director of marketing for the Plumbing, Heating and Air Conditioning Group of Crane Co. John M. Beck has been appointed a sales representative and will cover Indiana, part of Ohio and part of Kentucky.

► JOHN HUBER as assistant director of sales for the Heating & Air Conditioning Div., Controls Co. of America. Prior to his recent appointment, Mr. Huber was manager of the division's midwestern sales district. Succeeding him in this capacity is Perry Creemens, formerly a sales engineer for the district.



John Huber



Norman DeLillo

► NORMAN DELILLO as district manager covering New Jersey, Pennsylvania, Maryland, Delaware and the District of Columbia for Lima Register Co. Mr. DeLillo replaces Fred E. Bayless.

► THOMAS F. MCINTYRE as manager of the heating and air conditioning department for Wolff, Kubly & Hirsig Co. He replaces H. Forrest Iler, who is retiring after more than 26 years with the company. Mr. McIntyre was formerly associated with Mueller Climatrol Div. of Worthington Corp.

► RAYMOND H. CAREY as sales engineer for heating and special purpose controls for General Electric Co.'s Appliance Control Department. Prior to his recent appointment, Mr. Carey was a sales engineer for the Construction Equipment Div., Blaw-Knox Co.

*the warmest way  
to the heart of a community*



with  
**ROUND OAK**  
 **Circulaire** **OAK** **FURNACES**

**ROUND OAK Circulaire Furnaces  
Are Designed For Greater Comfort,  
Engineered For Bigger Profits!**

You benefit two important ways by selling Round Oak Circulaire Furnaces. Round Oak Units are especially designed to provide the all-round comfort customers want. And satisfied customers mean more repeat business for you. The efficient components plus the extra heavy duty heat exchanger enables the Round Oak Furnace to capture and deliver more heat longer. In fact, this wrap around Versat-all heat exchanger is so durable it is guaranteed for life! This means total customer satisfaction. And, since Round Oak Furnaces are designed for quick, easy installation, you save on installation time which means more profits for you. Round Oak offers gas, oil and coal furnaces in all price ranges and sizes from 65,000 to 1,000,000 BTU and also offers the Clima Pump, the all new, all electric heat pump. Write today for all the facts. There's no obligation.

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DIVISION OF PEERLESS CORP.  
DOWAGIAC, MICHIGAN

*Manufacturers of quality Furnaces, Central Air Conditioning  
and Electric Clima-Pumps.*

## appointments

(Continued)

► JACK VAN DIEREN as a sales engineer in the Cleveland area for The Nu Way-Sundstrand Corp. Previously Mr. Van Dieren was a sales engineer for the American-Standard Industrial Div.



Jack Van Dieren



Pete Wing

► PETE WING as district representative serving northern Illinois and part of Chicago for Milwaukee Electric Tool Corp. Mr. Wing succeeds Thomas Langdon, who will now handle sales in Arizona, New Mexico, and western Texas.

► R. S. DOHERTY as New York sales representative for Modine Mfg. Co. Mr. Doherty, formerly vice

president of the A. W. Cash Co., plans to open an office at Mt. Kisco, N. Y. Grant H. Jacobson has been named sales representative in the north Texas territory. He will have headquarters in Dallas. Both men will work with wholesalers to help train their personnel and will provide technical and application service as well as sales assistance.

## Obituary

### Glenn A. Ashburn

GLENN A. ASHBURN, 50, died suddenly October 5, 1960 of a heart attack suffered while in the midst of a fishing trip. Mr. Ashburn was a principal of Ashburn Supply Co., Culver City, Calif., wholesaler distributors of heating equipment. Well known for his association activities, he helped organize the Institute of Heating and Air Conditioning Industries and was one of its first presidents. He also served as president of the Northamerican Heating and Airconditioning Wholesalers' Association. He is survived by his wife and four children as well as four brothers. Two brothers, Robert and George, will continue in active management of Ashburn Supply Co.



#### SWIVEL HEAD SQUEEZER TONGS ▶

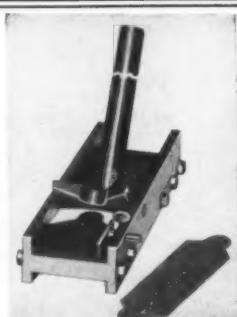
For closing Government box lock connection on duct work and all standing seams. Swivel head makes tongs usable on all four sides, in either vertical or horizontal position.

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line of SHEET  
METAL MACHINES  
AND TOOLS  
... see

DRIVE CLEAT NOTCHER ▶  
Handles up to 3" wide, 20 ga.  
or lighter. Hand operated. Mounts on  
bench, or on job with clamps,  
or bolts and screws.

**REINER & CAMPBELL CO., INC.**

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Newark 5, N.J.



#### CLIP PUNCH ▶

For fastening slips  
or seams on ducts.  
Will push a "half  
moon" thru 3  
thicknesses of 18-  
ga. steel. No ham-  
mering or flattening  
out to fasten slip to the duct.



#### QUICK SET DIVIDERS ▶

Fastest, most accurate  
size on the market. Two sizes for  
circles up to 36" and 48".  
Removable steel points, or  
pencil. No center punch  
needed.



## GO TO GOETHEL FOR FAST SERVICE WE HAVE WHAT YOU NEED



FULL BLAST  
GATES 3"  
and up  
STOCK

FLANGES &  
GASKETS  
BLOWPIPE  
ELBOWS  
DUST  
COLLECTORS  
& FITTINGS  
PVC PLASTIC  
HOODS —  
PIPE — ELBOWS 3" to 12" STOCK



HALF BLAST  
GATES 3"  
to 8"  
STOCK

BALL JOINTS  
IMMEDIATE SHIP-  
MENT ON STOCK  
ITEMS. WRITE FOR  
PRICE LIST.

PIPING  
10' LENGTHS, 7"  
& LARGER. 16 ga  
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Model  
C-85-FB  
OIL-FIRED  
85,000 Btu  
Output



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CALL, WRITE OR WIRE NOW:

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- 30" HIGH . . . 16½" below joist.
- INSULATED JACKET
- CIRCULATED, FILTERED AIR
- QUIET OPERATION
- RETURN AIR OPENING . . .  
to facilitate a return-duct if used.
- EASY ACCESS . . .  
for filter removal or furnace service  
from top.
- PRE-ASSEMBLED & WIRED

GENERAL AUTOMATIC PRODUCTS  
CORPORATION

2300 Sinclair Lane  
Baltimore 13, Md.  
Eastern 7-7703

## FALLSINGTON

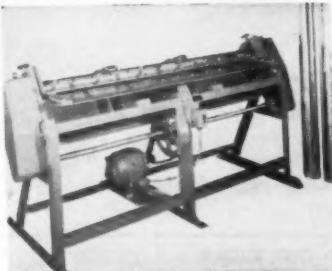
3' 5' & 10' MODELS

Ideal for Manufacturers of Snap lock pipe. Hundreds in operation!

A complete line of sheet metal machinery

Another Profit-making machine by

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advertising . . .*

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Paste, Liquid, Salts, etc.

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**Tired of Drill bits breaking?**



**TRY SAMSON!**

**"THE DRILL BIT**  
that will not  
SLIP or SLIDE on  
SHEET Metal"  
'snap resistant'

**SAMSON DRILL COMPANY**  
443 East Tremont Ave., Bronx 57, N.Y.

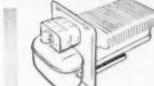
**Skuttle's QUALITY LINE**

of Humidifiers and Filters

means **MORE SALES**

**MORE PROFITS for you!**

**Skuttle MANUFACTURING CO. • MILFORD, MICHIGAN**



... move your products in greater volume  
through consistent advertising in this

# Service Section...

Rates for display space in the Service Section are \$14.00 per inch per insertion. One-inch minimum space accepted. Closing date — twentieth of the month preceding issue.

## Classified Advertising

Rates for classified advertising are 15 cents for each word, including heading and address. One inch \$7.00. Count nine words for keyed address. Minimum \$2.50. Closing date 20th of month preceding publication.

## ✓ Agents Wanted

Sales representative calling directly on trade accounts wanted by furnace and air conditioner manufacturer. Complete line oil, gas, electric furnaces and air-cooled split-system air conditioners. Territory available in Midwest, East, Southeast and Southwest. Give details as to experience, territory, other lines handled. Replies held in confidence. Address Key 1204, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

Manufacturer of automatic warm air heating and air conditioning equipment is interested in contacting sales engineer to travel Northern Indiana, calling on heating contractors. Company pays travel expense, salary and commissions. Reply Key 1203, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

REPRESENTATIVES WANTED — Manufacturer offering new quality line of registers, grilles, ceiling diffusers, etc. is looking for manufacturers' agents in many sections of the country and is offering exclusive territories, liberal commission basis. This top quality line is an excellent addition for agents handling HVAC equipment and calling on architects, engineers, contractors, etc. Please reply Key 1201, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

## ✓ Situation Open

ESTIMATOR WANTED: General Sheet Metal Shop, Mid-West location. Wonderful opportunity for right man. Write Key 1202, American Artisan, 6 N. Michigan Ave., Chicago 2, Ill.

## ✓ For Sale

### TECHNIQUES OF DUCT WORK ESTIMATING

Learn How the Pros Figure The Big Jobs By Poundage-Square Footage — Linear footage — Fittings. This information is ordinarily very closely guarded and is invaluable to the progressive shop or individual.

Send check or money order \$3.50 made out to

W.A.C. Co.  
Medway 3, Mass.

## ✓ Equipment Wanted

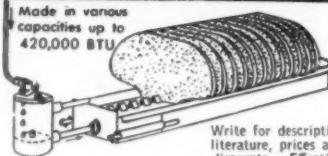
Wanted: Close out lots of warm air residential heating equipment. Write giving description and price to E. L. Bilek, 2025 Zollinger Road, Columbus 21, Ohio.

WANTED: Used Wilder-type rotary slitting shears. W. A. C. Co., P. O. Box 224, Framingham Center, Mass.



SO SOFT RUBBER  
KNEE PROTECTORS  
EVERY ROOFER SHOULD  
HAVE A PAIR.  
PRICE \$2.50.  
ORDER YOURS TODAY.  
JOHNSON  
LADDER SHOE CO.  
EAU CLAIRE, WIS.

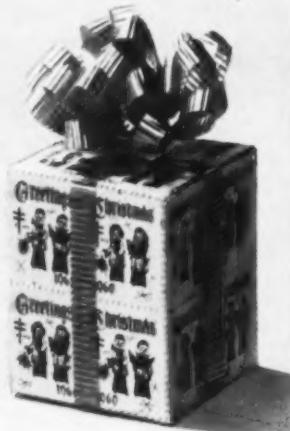
## MONMOUTH HUMIDIFIERS



Made in various capacities up to 420,000 BTU  
control of humidity is positively assured by installing Monmouth Humidifiers. Simple installation and greater customer satisfaction mean larger profits.

CLEVELAND HUMIDIFIER CO.  
7802 Wade Park Ave. Cleveland 3, Ohio

NO TIME OF YEAR FOR TB.  
Is there ever a right time? Of course not. But Christmas, more than any other season, should be a time of glowing good spirits, health and happiness. In the fight against TB, it can at least be a time of hope—when millions of Americans help by using Christmas Seals. Answer your Christmas Seal letter today.



## ✓ AIR LOSS

## ✓ AIR DISTRIBUTION

IN 30 SECONDS

with  
safe • fast • positive  
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SMOKE CANDLES

Write Today For Catalog  
Kilgore, Inc., Westerville, Ohio

## FLOAT VALVES for Evaporative Coolers, Poultry Troughs, etc.

Operates in 1" of water.

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Los Angeles 35, Calif.

## "CORRECT PRACTICE in OIL HEATING"

A complete reprint of the valuable series  
by J. J. Mirabile

This special series covers every angle of oil burner work, including arrangement of shop . . . stocking parts . . . record-keeping . . . installation procedures . . . the handling of crews . . . how to make heating surveys . . . how to size combustion chamber . . . how to install thermostat . . . how to start the burner . . . how to use testing instruments . . . and how to operate a service department. It contains, as well, a complete list of causes and cures of oil burner trouble that will serve as a reliable guide in making service calls.

Every shop handling oil burner jobs should own this book. Full size, 8½ by 11 inches — 57 pages of practical helps. Send \$1.00 for a copy to the address below.

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# METLVENT

## SALES ARE SOARING FOR SOUND REASONS



**REASON NO. 1.** When an installer investigates METLVENT for the first time he quickly discovers it's the best designed, best constructed gas vent pipe on the market. There are no loose parts. Inner and outer pipes are curled together and properly spaced PERMANENTLY. Bottom edges of all members are curled to give them rigidity, guard against damage and insure original perfect shape for easy joining.

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**REASON NO. 3.** We maintain one of the largest inventories of completed items in the nation . . . everything you need . . . for prompt shipment from our central location to every point of the compass. You can be sure of having what you want when you need it. Is it any wonder METLVENT sales are soaring?

Try METLVENT on your next job and you, too, will be sold to the hilt. See it at your H&C Jobbers.



**HART & COOLEY  
MANUFACTURING CO.**

500 EAST EIGHTH ST., HOLLAND, MICHIGAN  
IN CANADA: HART & COOLEY MANUFACTURING CO., FORT ERIE, ONTARIO



WORLD'S LARGEST PRODUCERS  
OF REGISTERS and GRILLES

## ANNOUNCES

# NEW HIGH CAPACITY RETURN AIR GRILLES

## No. 64 DESIGN



NOS. 640 & 640H  
SIDEWALL GRILLES  
with horizontal fins.  
Standard sizes thru 30 x 24.

NO. 640V —  
same as above but with  
vertical fins. Standard  
sizes thru 20 x 24.

These newly developed Return Air Grilles with  $\frac{1}{2}$ " fin spacing combine many features of superiority that make them the logical first choice for Central Return Air Systems, ventilation, for providing combustion air in utility rooms, ventilation in confined spaces and return air for Perimeter Systems. Note these outstanding features:

- NEW and EXCLUSIVE H&C ANGULAR FIN DESIGN  
**PROVIDES UNMATCHED FREE AREA**—far greater than can be obtained with the curved or flat fins used in other grilles of this type. So much so that
- SMALLER SIZES CAN FREQUENTLY BE USED,  
**WORTHWHILE SAVINGS MADE.**
- RATTLE-PROOF: Heavy steel one-piece construction plus the considerably greater strength added by the unique fin design make these the sturdiest grilles of this type on the market . . . entirely rattle-proof.
- VISION-PROOF: With fins set at 30° the openings are virtually vision-proof.
- DECORATOR GRAY BAKED-ON ENAMEL FINISH
- AVAILABLE FOR SIDEWALL AND BASEBOARD INSTALLATIONS TO SUIT EVERY REQUIREMENT.

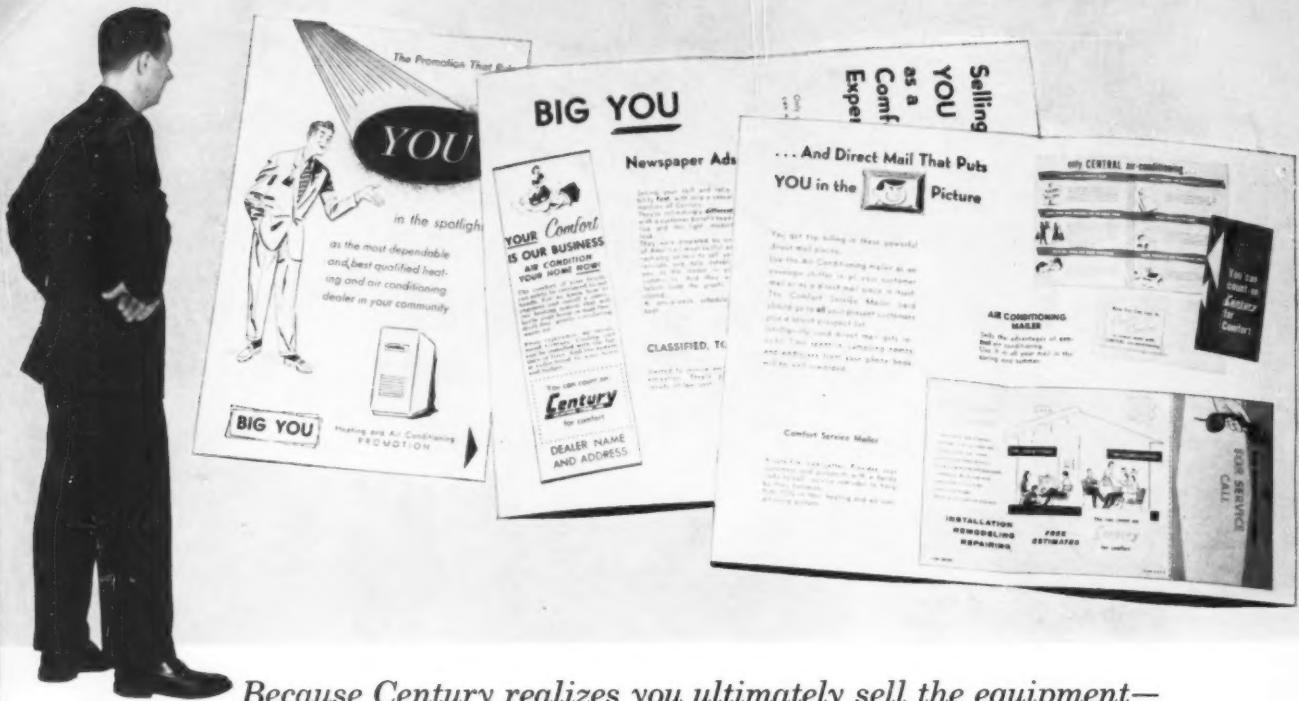
See them at your H & C Jobbers.

NO. 647 BASEBOARD GRILLE.  
Available in eight popular standard sizes.



**HART & COOLEY  
MANUFACTURING CO.**

500 EAST EIGHTH ST., HOLLAND, MICHIGAN  
IN CANADA: HART & COOLEY MANUFACTURING CO., FORT ERIE, ONTARIO



*Because Century realizes you ultimately sell the equipment—*

## Century's Cooperative Advertising Program Promotes Your Ability and Reputation First

### THIS CO-OP PLAN IS DIFFERENT!

A leading contractor magazine editorial recently stated: **"Who Sells The Stuff Anyway."**

*"Most of the promotional material prepared for use in our industry suffers from one major defect which we think explains why it is not used more widely: Most of the copy is about the manufacturer, with very little space for the dealer's story."*

*"Recently, a co-op advertising program that runs counter to the general trend crossed our desk, and we hope there will be many more. In its new promotional package, Century Engineering provides mats in which 90 percent of the copy is devoted to the dealer, 10 percent to the product."*

You are featured as the best qualified, most dependable heating and air-conditioning contractor in your community . . . even when Century pays half the space cost.

Century ad mats, radio scripts, direct mail, and literature naturally devote some space to the outstanding features of the equipment, but since even the best equipment won't provide consumer satisfaction without proper installation, it's your ability and reputation that get the lion's share of the selling copy.

If you're interested in building YOUR business, send the coupon for a copy of Century's unique promotion story. There's no obligation.

**YOU CAN COUNT ON**  
**Century**  
HEATING - COOLING  
FOR COOPERATION

JERRY JOHNSON, Sales Manager  
Century Engineering Corp., Cedar Rapids, Iowa

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